



# **Air Force Flight Screening: Evolutionary Changes, 1917-2003**

**By**

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## FOREWORD

Until World War II, the Army Air Corps counted on its stringent qualification requirements and low production goals to screen its pilot candidates. During World War II, the Army Air Forces needed men to fill its requirements for 100,000 aircrew positions, and thousands of candidates went through the training process. Qualification requirements relaxed initially and became more rigorous as the need for pilots changed during the course of the war, but no true flight screening program existed until the Korean War with the advent of the Revitalized Pilot Training Program in November 1952. Demand for more pilots and high attrition rates during the Korean War, which were prevalent during World War II as well, combined with tight defense budgets to force the Air Force to turn to some sort of flight screening to reduce attrition rates.

For most of the next decade, Air Training Command (ATC) continued to run a light plane screening program; but the introduction of the T-37 and the all-jet training program in 1958 encouraged Air Force officials to view light plane screening as counterproductive. It ended two years later. However, the war in Southeast Asia increased the demand for pilots again, and ATC reintroduced light plane screening, which continued in various forms until insurmountable problems with the T-3A prompted the end of the program in 1997. Inevitably, attrition rates rose, ensuring the return to a new program, Introductory Flight Training. By 2002, however, the hunt was on for a replacement program to provide a higher degree of standardization and uniformity. As the Air Force faces an era of stressed budgets, filling its ranks with those who will earn their wings is imperative. A flourishing flight screening program is as important today as any time in the Air Force's history.

As Air Education and Training Command embarks on yet another revision, returning to the philosophy of flight screening before flight training, it is instructive to examine how the command got to where it is today. Ultimately, concern with the monetary and personnel costs associated with high attrition rates guarantees that the Air Force will continue to use some sort of flight screening to identify pilot candidates whose probability to earn their wings is high—the very people who form the core of the Air Force's combat capability.

  
DONALD G. COOK  
General, USAF  
Commander

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# **Air Force Flight Screening: Evolutionary Changes, 1917-2003**

## **Introduction**

It wasn't until Air Force leaders began worrying about the effects attrition had on meeting yearly pilot production requirements that flying training officials began to show any interest in a flight screening program to identify pilot candidates with poor potential of completing pilot training. In fact, a flight indoctrination program, which taught only the basic fundamentals of flying, didn't even exist until 18 February 1943 with the inauguration of a new college training program. A true flight screening program didn't exist for another 10 years. No matter what the Air Force called the program—flight screening, flight indoctrination, light plane screening—the ultimate goal was to reduce the number of candidates who did not successfully complete pilot training. That isn't to say the Air Force and its predecessors weren't concerned about attrition and the attempt to reduce the number of eliminations from flying training, but the times and situations were very different.



**A World War I aviation cadet reports  
for flying training in a JN-4 at Kelly  
Field.**

When the United States entered World War I on 6 April 1917, nearly three years after combat started in August 1914, its Army's fledgling air arm had only about 65 officers and 50 flying students, a handful of National Guard and Reserve officers with flying experience, and

1,087 enlisted men. They were located on a half-dozen small training fields, flying aircraft that were not combat-capable. With virtually no time to develop a training system of its own and the requirement to train thousands of men to meet General John J. Pershing's 5,000-pilot quota, the Aviation Section adopted the program used by Canada, which evolved into 8 weeks (expanded to 12 in late 1918) of ground school at leading American universities, followed by instruction at flying schools. On 21 May 1917, the Army established ground schools at the Massachusetts Institute of Technology, Cornell University, and the Universities of Texas, Illinois, California (Berkeley), and Ohio State. In July, additional ground schools opened at Princeton and the Georgia School of Technology. These ground schools became the forerunner of preflight training. In a large-scale program where educational and military qualifications had to be lowered, some type of preflight training was necessary to help reduce the number of eliminations.<sup>1</sup>

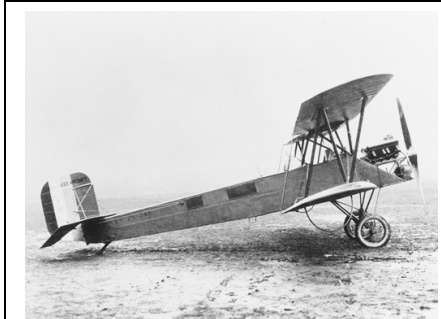
Pilot qualifications were fairly simple in the 1917-1918 time frame: candidates had to be honest, athletic, under 25, and possess two years of college or three years of some sort of "scientific" training. Flying centers sprung up quickly—Selfridge Field in Michigan; Chanute and Scott Fields in Illinois; Wilbur Wright Field in Ohio; Kelly, Taliaferro, Love, Call, Rich, and Ellington Fields in Texas; Post Field at Fort Sill, Oklahoma; and Gerstner Field in Louisiana. The Army almost doubled the number of flying centers in 1918. Cadets received 6-to-8 weeks of preliminary (later called primary) training flying primarily in the Curtiss JN-4 Jenny before receiving their wings and commissions as second lieutenants (Reserve Military Aviator). Training consisted of 40- 50 flying hours divided between 4-10 hours of dual training, 24 hours solo, and a 16-hour cross country flight. Advanced training was given in Europe; after 90 flying hours,

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<sup>1</sup> *The Official Pictorial History of the AAF*, 1947, p. 46; Alfred Godberg, ed., *A History of the United States Air Force*, 1957, pp. 18-19; Dr. W. Eugene Hollon, *History of Preflight Training in the AAF 1941-1953*, Jun 53, pp. 4-7, hereafter referred to as *History of Preflight Training*.

pilots were considered qualified for front line duty. By the end of the war, 16,587 cadets had graduated from the eight ground schools, 15,000 had entered preliminary training in the United States, and 8,689 had earned their wings.<sup>2</sup>

In the 20 years between the end of World War I and the build up in 1939 prior to American entry into World War II, the high educational standards or previous military experience required of the Army's flying trainees precluded the need for a



**The PT-1 in 1924 was the first post-WW I trainer ordered in quantity to replace the aging JN-4s.**

flight indoctrination or screening program or even a separate, formalized preflight phase. In fact, ground training was conducted concurrently with flying training. Between 1919 and 1922, pilot training consisted of a four-month preliminary stage conducted at either Carlstrom Field, Florida,

or March Field, California, and three months of advanced training held at Post, Kelly, or Ellington Fields. In June 1922, the Air Service consolidated all flying training in San Antonio, Texas, to save money and take advantage of the good flying weather year-round. Instruction consisted of five months of primary (previously preliminary) instruction at Brooks Field and six months of advanced training at Kelly. Most of the aircraft flown were left over from the war. Between 1919 and 1926, 2,488 students entered preliminary or primary training, but just 793 graduated from advanced training—only 32 percent of the trainees earned their wings.<sup>3</sup>

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<sup>2</sup> See note above.

<sup>3</sup> *History of Preflight Training*, pp. 7-9.



On 2 July 1926, the Army Air Service became the Army Air Corps and began a five-year expansion program to increase the Army air strength to 1,518 officers, 2,500 flying cadets, 16,000 enlisted men, and 1,800 serviceable aircraft. The expansion program led to the establishment of the Air Corps Training Center at Duncan Field, adjacent to Kelly, under Brig Gen Frank P. Lahm, who took over his new duties on 1 September 1926. One of the changes he instituted was a revamping of the curriculum, which now included eight months of primary and basic training and four months of advanced. Another of Lahm's goals was to supervise flying training activities more closely and coordinate primary and advanced training to move the higher elimination rates to primary training rather than advanced. As Figure 1 shows, General Lahm was largely successful in this effort. Interestingly enough, the final graduation rate was similar to that of the 1922-1926 time frame, when only approximately 20 percent of the entering students graduated from advanced training.<sup>4</sup>

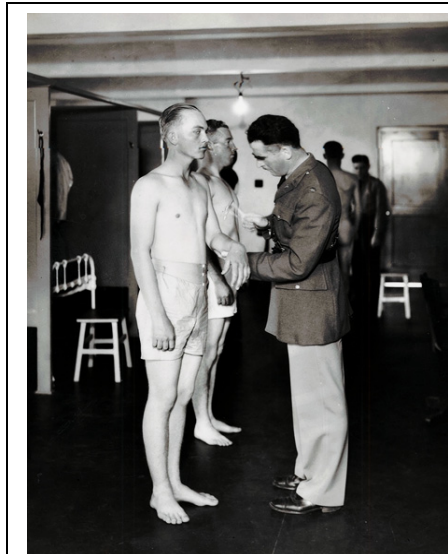
<p><b>Figure 1</b> <b>Air Corps Five-Year Expansion Effort</b></p>						
Year	Students Entering Primary and Basic	Primary and Basic Attrition Rate	Students completing Primary and Basic and Entering Advanced	Students completing Advanced	Advanced Attrition Rate	Overall Attrition Rate
1927	738	81%	137	74	46%	90%
1928	1065	81%	204	191	6%	82%
1929	1167	72%	328	313	5%	73%
1930	1187	78%	263	247	6%	79%
1931	1327	76%	325	300	8%	77%
<b>Total</b>	5484	77%	1257	1125	11%	79%
Source: <i>History of Preflight Training</i> , p. 11.						

<sup>4</sup> *History of Preflight Training*, pp. 10-11.

Air Corps Training Center officials also attempted to devise a classification system that would define potentially successful candidates for flight training. In 1928, they introduced the first use of psychological tests and thorough physical examinations. The psychological tests were supposed to measure various mental aptitudes, but they were not very successful and were soon dropped.<sup>5</sup>

## The World War II Experience

On 1 October 1931, the Air Corps Training Center moved to the newly completed Randolph Field, where the Air Corps would conduct primary and basic training. The Advanced Flying



**Thorough physical examinations of pilot candidates were first introduced in the late 1920s.**

School remained across town at Kelly. Beginning in 1938, the Air Corps formulated various expansion programs that changed rapidly over the next few years as the requirements for pilot production increased dramatically after the war started in Europe. The initial expansion program called for the production of 4,500 pilots in two years to man 24 groups. Contracted civilian flying schools would

conduct primary training, while Randolph would accomplish all basic training with advanced training at Kelly and Brooks. Officials reduced the entire flying training cycle from 12 months

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<sup>5</sup> *Ibid.*

to 36 weeks, 12 each for primary, basic, and advanced. Army officials signed contracts with nine civilian flying schools, and the first classes began on 1 July 1939.<sup>6</sup>

The 1939-1940 pilot training expansion program had an interesting feature—the Civil Aeronautics Authority (CAA) project, which established small training centers at a number of colleges to give preliminary (even more rudimentary than primary) flying training to students. Its primary goal was “to make the youth of the nation air-minded,” while building a reserve of partly trained pilots who could be used in the event of an emergency. Congress voted \$4 million to train 10,000 pilots, at least 5 percent of whom were not to be college students. The response was enthusiastic. Between September 1939 and July 1940, 9,505 students began training at 435 college locations; 87.6 percent of these students completed the training. Although not designed as a flight screening program, this initial civilian pilot training project achieved its objectives for the most part and would be greatly expanded in the upcoming years.<sup>7</sup>

The 24-group program was just the first step in what would become a gigantic expansion of the Air Corps. On 14 May 1940, four days after the German invasion of Western Europe, President Franklin D. Roosevelt approved a 41-group plan, which called for the production of 7,000 pilots a year. On 8 July 1940, the Air Corps redesignated the training center at Randolph as the Gulf Coast Training Center and established two additional training centers to manage its ever-increasing number of flying schools: Moffet Field in California became home to the West Coast Training Center (which later moved to Santa Ana), while the Southeast Coast Training Center was located at Maxwell Field, Alabama.<sup>8</sup>

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<sup>6</sup> *Ibid*, pp. 13, 15.

<sup>7</sup> History, AAFTC, *History of AAF Flying Training Command 1 January 1939 to 7 July 1943*, pp. 78-79.

<sup>8</sup> *History of Preflight Training*, pp. 17-18; Thomas Manning, *et al.*, *History of Air Training Command 1943-1993*, p. 6.

Almost immediately, a 12,000-pilots-a-year goal overtook the one for 7,000, and Air Corps officials quickly realized the demands for pilots would not stop at 12,000. They also knew there were not enough candidates with two years of college to provide a sufficient number of aviation cadets. Some type of additional training would be necessary to make up for the lowered entrance standards. This point came to the forefront again when planned production mushroomed in March 1941 to an annual requirement for 30,000 pilots. The 7 December 1941 Japanese attack on Pearl Harbor catapulted the United States into war and subsequently raised the goals for aircrew members to 50,000, 75,000, and ultimately 100,000 a year.<sup>9</sup>

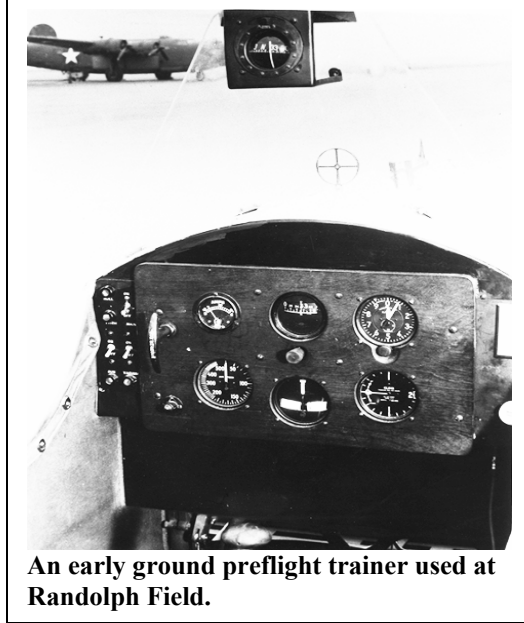
Prior to American entry into the war, an applicant couldn't become a cadet unless he was older than 20 and had completed two years of college or passed a special exam. Even so, applicants still had to be approved by cadet examining boards and the Office of the Chief of the Air Corps. The Air Corps still had quotas for the number of cadets it could admit. After December 7<sup>th</sup>, the need to get aviation cadets into training wiped out all quotas, examining boards received the power of final approval, and a qualification test substituted for the college education. Shortly after that, the age requirement dropped to 18. To encourage enlistments and meet its production goals, the Army Air Forces (AAF) began using the Aviation Cadet Qualification Examination after 15 January 1942 in lieu of the former requirement for two years of college. In addition, the AAF couldn't afford the peacetime attrition rates. Maj Gen Barton K. Yount, Commander of the AAF Flying Training Command, wrote that some form of preflight training was inevitable to assure a common level of academic background and give newly recruited cadets the fundamentals of military discipline.<sup>10</sup>

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<sup>9</sup> *History of Preflight Training*, pp. 18-19.

<sup>10</sup> On 20 June 1941, the War Department created the U.S. Army Air Forces as its aviation element. On 23 January 1942, the AAF established the Air Corps Flying Training Command, redesignating it as the Army Air Forces Flying Training Command on 15 March 1942. On 7 July 1943, the AAF Flying Training Command merged with the

The Air Corps had begun planning for preflight training as early as 1940. Preflight training allowed cadets from widely different educational backgrounds to receive a thorough indoctrination in physical and academic training to prepare them for the difficult flying training ahead of them. While officials agreed to the need for preflight training, the length of training and emphasis on various parts of the curriculum changed over the course of the war. When preflight training began in the fall of 1941, the course was 5 weeks long. A 9-



**An early ground preflight trainer used at Randolph Field.**

week program replaced it in January 1942, which in turn was supplanted by a 10-week course in the spring of 1944. The core curriculum included academic preparation (mathematics, military hygiene, first aid, and military law), administrative indoctrination (customs and courtesies of the Air Corps, squadron administration and command, and organization lectures), basic military indoctrination (drill, ceremonies, and inspections), and physical training. As the length changed so did the emphasis on the various subjects; and as the AAF gained combat experience, new courses were included, such as gunnery practice, oxygen indoctrination, and a ground phase of flight training (aircraft identification; code; and maps, charts, and aerial photos).<sup>11</sup>

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AAF Technical Training Command to form the Army Air Forces Training Command. Alfred Goldberg, ed., *A History of the United States Air Force*, 1957, pp. 94-95; *History of Preflight Training*, p. 20.

<sup>11</sup> *History of Preflight Training*, pp. 55-71.

On 21 February 1941, the War Department issued orders to establish replacement training centers at or near (in the case of Randolph and Kelly) the three regional training centers. Soon after the first two schools opened at Maxwell and Kelly in 1941, they began an experimental psychological testing program to direct



**Aviation cadets taking an aptitude test for placement as a pilot, navigator, or bombardier.**

cadets to appropriate training. While preflight training wasn't affected, the program required the trainee to take a series of tests before graduation to measure skills, psychological aptitudes, interest, knowledge, physical qualifications, and other characteristics. By weighing different sections of the psychomotor and psychological examinations, officials hoped to be able to determine a relative aptitude score, or stanine—standard nine—for pilots, navigators, and bombardiers. Army officials began using the term stanine in 1942. It represented a score on a standard scale of measurement, which ran from 1 (the lowest) to 9 (the highest). Classification personnel used these stanines as a common index to place trainees in the proper training.<sup>12</sup>

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<sup>12</sup>The War Department identified Moffet Field as the replacement training center for the West Coast Training Command, but it was returned to the Navy in the late spring of 1941. A newly constructed

Within the first three months of 1942, the number of trainees quickly overwhelmed the capacity of the replacement training centers, whose names changed to Preflight Training Centers on 30 April 1942. As a result, AAF training officials decided to split preflight from the classification of trainees, establishing three Classification Centers at Kelly, Santa Ana, and Nashville, Tennessee. By November 1943, however, the need for aircrews began to shrink, and the basic training centers took over all duties of processing and classifying aviation cadets in the spring of 1944. Between February 1942 and March 1944, the three regional classification centers processed 400,000 aircrew candidates: 260,000 (65 percent) as pilots, 40,000 (10 percent) as navigators, and 40,000 (10 percent) as bombardiers. The remaining 60,000 (15 percent) were eliminated for various reasons: physical disability, low aptitude, etc. Technical Training Command's basic training centers handled another 100,000. These basic training centers helped prepare the men psychologically for their particular jobs and eliminated those not qualified.<sup>13</sup>

While a valuable way of coping with the hundreds of thousands of aircrew applicants and getting them into training as quickly as possible, none of the preflight training involved any actual flying. That came with the start of the College Training Program in 1943. By December 1942, the AAF had a backlog of 93,000 cadets waiting to go into the service. Lt Gen Henry H. "Hap" Arnold, chief of the AAF, devised the college program as a way to absorb this backlog and keep the cadets busy, but it was also a way for cadets to get additional college training, primarily in math and physics. On 7 January 1943, the Secretary of War approved Arnold's basic plan, a five-month curriculum at various colleges across the country, with some modifications, including "Civilian pilot training for the screening of aircrew personnel to be

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base at Santa Ana was chosen as the new location, and training there did not begin until April 1942. Psychomotor refers to muscular action believed to result from prior, conscious mental activity. *History of Preflight Training*, pp. 20, 24, 28-29, 31.

<sup>13</sup> *Ibid*, pp. 33-34.

give each qualified student during the month in which he completes his course.” He directed the AAF to have a minimum of 35,000 cadets in training no later than 1 April 1943. Two weeks later, on 20 January, AAF Flying Training Command told its three regional flying training centers to set it up. On 1 March 1943, some 35,000 trainees reported at the colleges, which had between 500 and 3,000 trainees each. By the end of the program in the spring of 1944, some 153 colleges provided training; enlistment hit its highest point on 31 December 1943 with 68,109 men.<sup>14</sup>

By late 1943, the need for the College Training Program was gone. AAF officials believed they had a sufficient number of training facilities to handle the numbers of aircrews required to



**BT-13s and BT-14s were the standard basic trainers for much of World War II.**

win the war. Flying Training Command was producing about 100,000 pilots a year, and combat attrition rates were down. Furthermore, the backlog of inactive recruits, the reason behind the College Training Program, was down as well. On 1 January 1944, the order went out to shut the program down. By 30 June 1944, only four students who were hospitalized remained in the program.<sup>15</sup>

What makes the College Training Program of special interest was the 10-hour flight indoctrination course the college

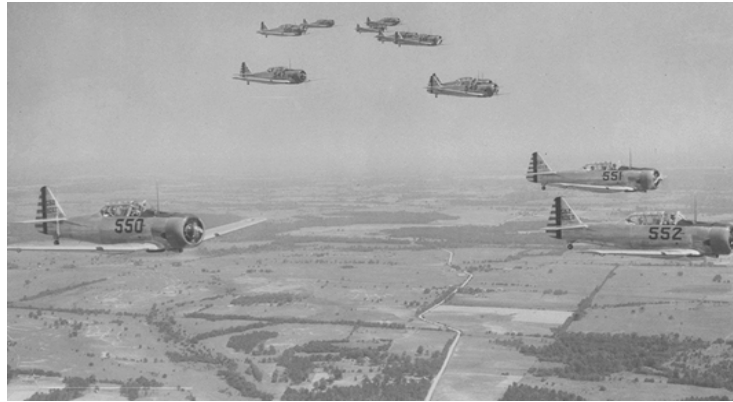
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<sup>14</sup> *Ibid*, pp. 35-39, 46.

<sup>15</sup> *Ibid*, pp. 42-44.



trainees received. The War Department included a proviso for civilian pilot training in its plan to initiate the program in January 1943. While the initial direction called for a screening program, in actuality it was a flight indoctrination program, providing flying familiarization only. General Yount, AAFFTC commander, said no student would be eliminated from the flying portion of the



**AT-6s flying from Maxwell Field in 1942.**

program except for airsickness or by personal request. Interestingly enough, many AAF personnel opposed the idea of civilian pilot training for these students, claiming it would be a waste of money, manpower, and critical resources; couldn't be operated efficiently; wouldn't screen out "misfits;" and would serve only as a morale booster while the cadets were in college training. Nevertheless, Flying Training Command wired the three flying training centers that Civil Aeronautics Administration-sponsored flying training would be offered. Each trainee was to receive 10 hours of dual instruction, divided between 12 lessons. No students flew solo. While instructor pilots recorded satisfactory or unsatisfactory ratings on a CAA Flight Record form upon completion of each lesson, trainees were rarely eliminated.<sup>16</sup>

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<sup>16</sup> The Civil Aeronautics Authority was renamed the Civil Aeronautics Administration in 1940. Like the earlier CAA project, the goal of the college flying program in 1943-1944 was to provide an introduction to flying, not flight screening. *Ibid*, pp. 46-47; History, AAFTC, 1 Jan 39-7 Jul 43, pp. 535, 540, 567.

Opinions about the value of the 10 hours of flight indoctrination varied widely. Each of the three flying training centers agreed that the program lowered attrition in primary training; but by the time students reached basic, they were at the same proficiency level of those who didn't attend the program. Significant problems existed with the program as well. With no standardization, the actual instruction in many cases was the equivalent of "joy-riding" and actual hands-on flying limited. Flight line discipline was poor, and the type of training and aircraft were too different from AAF flying training. Moreover, officials from the three flying training centers believed strongly that the costs of the program outweighed the benefits. Nonetheless, the entire College Training Program ended before Flying Training Command could act on its centers' recommendations to discontinue civilian flying training.<sup>17</sup>

It is noteworthy, however, that the attrition rate in primary dropped in 1943 and 1944 when the college flying program was in operation and rose dramatically again both in primary and basic in 1945 after it ended (see the figure below). Whether or not this change can be attributed solely to the college training program is debatable, but it is interesting that officials from all three flying training centers agreed that even the 10 flying hours of familiarization cadets received helped reduce student washout rates early in primary training. Even though many in the AAF were opposed to a flying indoctrination program when it was initially proposed, they remembered the experience with the College Training Program when faced with skyrocketing attrition rates in the upcoming years.<sup>18</sup>

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<sup>17</sup> *History of Preflight Training*, pp. 51-52.

<sup>18</sup> History, AAFTC, 7 Jul 43-31 Dec 44, p. 281.

<p style="text-align: center;"><b>Figure 2</b>  <b>Pilot Training Attrition</b>  <b>1939-1945</b></p>		
<b>Year</b>	<b>Primary Attrition</b>	<b>Basic Attrition</b>
1939	36.6%	9.9%
1940	35.4%	9.3%
1941	34.2%	10.1%
1942	29.8%	10.2%
1943	25.8%	10.4%
1944	17.6%	12.1%
1945	24.6%	22.1%
Source: History, ATC, Jan-Jun 1954, p. 98.		

### **Post War**

With the end of the College Training Program by mid-1944, the AAF and its successor, the United States Air Force after 18 September 1947, did not consider light plane screening again until 1951. On 12 October 1945, all American aviation cadets in preflight training who had voluntarily entered the active duty enlisted reserves could either separate or revert to enlisted status, temporarily closing flying training to American cadets. In June 1946, the AAF adopted a 52-week peacetime pilot training program, consisting of 15 weeks of primary, 17 weeks of basic, and 17 weeks of advanced training. While the new program had no provisions for a formal preflight (ground-training) phase, the curriculum specified that the first 40 hours of primary would be designated as preflight. The first peacetime class of 474 U.S. officers entered primary training at Randolph on 15 October 1946, while the first class of aviation cadets didn't enter primary training until 1 July 1947, after the pool of existing officers desiring pilot training drew down.<sup>19</sup>

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<sup>19</sup> On 1 July 1946, AAF Training Command was redesignated as Air Training Command. *Ibid*, pp. 152-154.

Air Training Command officials constantly refined the flying training program. On 15 October 1947, they combined primary and basic training into one program called “Basic Pilot Training.” Changes to the basic pilot curriculum made in July 1949 included increasing training from 52 to 56 weeks with the addition of a 4-week informal preflight phase. Furthermore, increased tensions stemming from the June 1948 Soviet closure of land routes into Berlin, Germany, and the resulting Berlin Airlift caused the Air Force to accelerate pilot training again, raising the possibility of returning to contract-operated flying training. On 25 July 1950, 1 month after the start of the Korean War, the Air Staff asked ATC to survey potential sites to accommodate 1,350 basic flying students a year. By October 1951, nine contract schools had opened at Greenville and Columbus AFBs, Mississippi; Spence Field and Bainbridge Airfield, Georgia; Bartow Field, Florida; Hondo Air Field, Texas; Malden Airfield, Missouri; Marana Airfield, Arizona; and Kinston (later Stallings) Airfield, North Carolina, to conduct basic flying training.<sup>20</sup>

Tight budgets collided with the need to increase pilot production, derailing all plans to revamp ATC’s flying training program. Nevertheless, it quickly was necessary to do just that, as recruiting pilot candidates got increasingly difficult at a time when eliminations and resignations from primary-basic training soared. Air Staff personnel examined pilot training in 1950-1951, discovering that of the 53 percent that washed out in the seven classes that graduated in 1950, only about 43 percent were eliminated because of flying deficiencies. The rest of the attrition came from fear of flying (4 percent), dislike of flying (3 percent), academic or military deficiencies (8 percent), physical deficiencies (15 percent), and lack of motivation (27 percent).

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<sup>20</sup> *Ibid*, pp. 170-171.

<p align="center"><b>Figure 3</b> <b>Post-War Pilot Production</b></p>					
Year	Entered	Graduated	Attrition		
			Primary	Basic	
			SE*	ME*	
1946	629	344	22.7%	16.2%	
1947	1,670	322	46.5%	18/9%	8.5%
1948	3,410	799	34.7%	8.2%	1.7%
1949**	3,841	1,765	41.7%	13.1%	2.4%
			43.6%	11.8%	4.0%
Jan-Jun 1950	2,026	837	46.9%	18.8%	7.8%
Jul 1950-Jun 1951 <sup>#</sup>	5,606	2,110	48.1%	9.6%	4.7%
			38.7%	13.6%	2.3%
Jul 1951-Jun 1952 <sup>##</sup>	9,547	3,062	29.6%	17.1%	4.2%
			27.0%	13.5%	5.0%
Jul-Dec 1952	3,111	2,313	27.5%	9.5%	2.2%
<p>* SE – single-engine    ME – multi-engine  ** Attrition separated between Jan-Jun 1949 and Jul-Dec 1949  <sup>#</sup> Attrition separated between Jul-Dec 1950 and Jan-Jun 1951  <sup>##</sup> Attrition separated between Jul-Dec 1951 and Jan-Jun 1952</p> <p>Source: <i>History of Preflight Training</i>, p. 153; Hist, ATC, Jan-Jun 54, p. 98.</p>					

Air Staff analysts believed the majority of the problems occurred during basic flying training. Clearly, a means to eliminate trainees prior to their entry into the more expensive basic stage was imperative.<sup>21</sup>

<sup>21</sup> The attrition rates mentioned in this paragraph are different than those shown in the preceding chart; the rates are for different time periods, which accounts for the disparity. ATC activated Flying Training Air Force and Technical Training Air Force in 1951. History, ATC, Jul-Dec 52, pp. 35-36, 38.

After receiving the Air Staff's study, ATC and Flying Training Air Force (FTAF) personnel spent four months analyzing the faults in the existing program, finding that many of the problems stemmed from the exclusive use of the T-6, an aircraft many considered too complicated for beginners. Since 40 hours of dual flying time was necessary before a trainee soloed in the T-6, this lengthy process potentially delayed earlier elimination from training. They, and other Air Force officers, advocated a long preflight and light-plane screening phase to precede flight training in the heavier T-6. By increasing preflight and providing some instruction in light planes, officials believed most of those with fear of flying, lack of motivation, or academic and medical problems would be eliminated before going into advanced training with the T-6 or T-28. Light



**T-6 trainer at Perrin AFB, Texas**

planes had other advantages as well: they cost less initially and were cheaper to operate. FTAF personnel also believed aviations cadets were not receiving sufficient discipline and indoctrination into Air Force traditions, so they weren't ready to assume the full roles and responsibilities of Air Force officers upon graduation from flying training.<sup>22</sup>

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<sup>22</sup> When the Air Force abandoned the advanced trainer (AT), basic trainer (BT), and primary trainer (PT) aircraft designations in 1948, those AT-6s still in USAF service were redesignated as T-6s. The initial phase of pilot training had been called basic; but on 1 Mar 1952, the designation was changed to primary pilot training, and the training formerly known as advanced training was changed to basic pilot training. Activation of the Crew Training Air Force on 16 March 1952 with a mission of conducting advanced training made these redesignations necessary. *History of Preflight Training*, pp. 178-179; *Flying Training Air Force History*, Jan-Jun 52, pp. 69, 133; *ATC History*, Jul-Dec 52, pp. 37, 40.

When the Air Staff completed its study of the 1950 pilot training classes, it recommended a four-phased approach to flying training, beginning with four months of preflight, progressing on to one month of light plane screening, and then going on to four months each of basic and advanced training. ATC refined this proposal, suggesting a total of 18 weeks of combined preflight and light plane screening (the latter to occur in the last 6 weeks and consist of 35 flying hours). Officers would enter straight into the light plane screening phase, shortening their course by 12 weeks. Air Force Reserve Officer Training Corps (AFROTC) graduates who received the proposed (but not yet implemented) 35-flying-hour, light plane training during college would go straight into primary training.<sup>23</sup>

While negotiations between HQ USAF and ATC staffs took place to finalize the new pilot training program, on 10 August 1951, the 3545<sup>th</sup> (Basic) Pilot Training Wing at Goodfellow AFB, Texas, began an experiment known as Phase I, encompassing 30 students with no previous flying experience. Wing instructor pilots trained 6 students flying in Beechcraft YT-34s and 9 students in Temco YT-35s while the other 15 (serving as the control group) flew in the T-6 for primary training. Initially these two experimental trainers were referred to as “light” planes because they weighed less than the T-6, but that changed to “replacements for the T-6,” and L-16s, L-21s, and PA-18s were called light planes. Basically, the object of the test was to see if the experimental trainers would be satisfactory replacements for the T-6. Class 52-E graduated in February 1952. The Goodfellow instructor pilots found the students flying the YT-34s and YT-35s were equally, if not more, proficient than those trained in the T-6s. Although the results were compiled, HQ USAF made no decision on which aircraft to acquire as the T-6 replacement. The demands placed on DOD’s budget in the early 1950s made production of either aircraft a remote possibility—at best. Even so, by that time,

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<sup>23</sup> The designation “light plane” referred to the size and weight of the aircraft in which the flying occurred. ATC History, Jul-Dec 52, pp. 41-42.

light plane screening was already an approved part of the four-phase program, known officially as the Revitalized Pilot Training Program.<sup>24</sup>

### **The Korean War and the Revitalized Pilot Training Program**

For the first time, the Revitalized Pilot Training Program had provisions for early elimination of potentially unsatisfactory students with a goal to avoid the expenditure of excessive amounts of unproductive training efforts, money, and resources in the more expensive phases of pilot training. Light planes cost less to acquire, cost less to operate, and provided the screening to detect weak students early in training. The final concept scheduled 3 months of preflight, 6 months of primary training, 5 months of basic, and 3 months of advanced training conducted by Crew Training Air Force, a total of 17 months. It moved light plane screening from preflight, as originally proposed, to primary training, which consisted of two phases over 24 weeks: 25 flying hours over 6 weeks of light plane screening in Piper Cubs (designated PA-18s) at the contract schools and L-21s at Goodfellow AFB and 120 flying hours over 18 weeks in the T-6. Students in the 18-week basic course either followed the single-engine track in the T-28 or T-33 or the multi-engine track in the T-6 and B-25. The purpose of the light plane screening phase was to eliminate students with fear of flying problems, chronic air sickness, and motivational deficiencies.<sup>25</sup>

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<sup>24</sup> Although the histories provided no information on the fate of the 30 students who participated in the test, of the 79 students who made up Goodfellow's Class 52-E, 46 completed primary training, 5 were held over, 24 were eliminated for flying deficiencies, and 4 were withdrawn (2 for physical deficiencies and 2 for other reasons). This translates to a 41.77% attrition rate for the class. History, FTAf, 1 May – 31 Dec 51, pp. 203-204; History, FTAf, 1 Jan-30 Jun 52, pp. 133-134, 146.

<sup>25</sup> History, Flying Training Air Force, Jul-Dec 52, pp. 44-48; Richard Emmons, *Major Changes in Undergraduate Pilot Training 1939-1998*, accessed at [http://www.aetc.randolph.af.mil/ho/upt\\_changes/upt\\_prt1.htm](http://www.aetc.randolph.af.mil/ho/upt_changes/upt_prt1.htm) on 9 Oct 03, hereafter referred to as *Major Changes in UPT*.



Initially, plans called for opening new preflight schools at Greenville and Columbus AFBs in November 1952; but on 8 August 1952, ATC received permission to substitute Lackland for



**The first PA-18s at the contract flying school at Columbus AFB, Mississippi.**

Greenville and Columbus. On 28 August 1952, Lackland AFB's commander, Brig Gen Wycliffe E. Steele, announced that Lackland would become the preflight school in November. Basically, it proved more economical to conduct preflight at one centralized location rather than two, and training at Lackland could be expanded at minimum expense. Furthermore, it cost less to conduct light-plane screening at the primary schools. Separating flight training from preflight wouldn't alter the original concept of preflight, so on 1 September FTAF published a revised preflight curriculum. The objective of the 3-month course was "to provide the aviation cadet with the fundamental knowledge required for his development as an Air Force officer." FTAF officials expected the extended preflight to weed out the "undesirables" before they reached primary training, enabling the aviation cadet trainees to adapt more rapidly to the large-scale pilot training program while increasing training standardization.<sup>26</sup>

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<sup>26</sup>*History of Preflight Training*, pp. 182-184, 186-187, 198-190; ATC History, Jul-Dec 52, p. 50.

The first class of 646 U.S. and 205 foreign pilot trainees to enter the revitalized, four-phase program began preflight training at Lackland on 3 November 1952. Originally identified as Class 53-H, ATC divided the group into three sections and designated them Classes 54-ABC. With the new 23-classes-per-year schedule, two-thirds of the class would graduate in 1954, making it a '54 class. Classes had to enter training every two weeks rather than the previous six weeks to match graduation dates from basic flying training with Crew Training Air Force's two-week advanced training entry cycle. This first class entered light plane screening on 6 February 1953. With over 7,000 students flying both the PA-18 and the T-6 during 1953, ATC found it necessary to spread training over 10 bases with 9 flying schools operated by civilian contractors (Bainbridge, Bartow, Graham, Columbus, Hondo, Malden, Marana, Spence, and Stallings) and one by the military (Goodfellow). The new syllabus published on 9 August 1953 cut five flying hours from the light plane-screening phase. Experience showed that 25 hours in the PA-18 were too many: after students became proficient, they began to form bad habits in their flying techniques, which they had to relearn and change when they progressed to the T-6. FTAF syllabus writers also eliminated work with loops and stalls since loops were too stressful on the high-winged Piper Cub and the T-6 had different stall procedures.<sup>27</sup>

One of the more problematic discoveries from the Air Staff's 1950 study of attrition was that 27.75 percent of the students eliminated were removed from pilot training for motivational problems, indicating the prestige associated with military pilots had been lost somehow. In August 1952, prior to implementation of the Revitalized Pilot Training Program, ATC established Project Tiger to identify and solve the problem of poor motivation and morale in pilot trainees. Command officials concluded they had to build a new pilot training curriculum around the premise that each student was being trained to fly a jet

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<sup>27</sup> Flying Training Air Force History, Jan-Jun 53, pp. 39-40, 82-83; ATC History, Jul-Dec 53, p. 86.

aircraft in combat. By paying greater attention to the development of leadership, discipline, competitive spirit, and a will for combat, they theorized that motivational problems could be mitigated. As a result, the four-phase pilot training program was the first time an integrated training plan had been developed for the conversion of men with no flying experience into combat-ready pilots. During all phases of training, whether it be preflight, primary (including flight screening), or basic, all students would constantly be reminded that they were being trained to fly fighter aircraft in combat. Results from the various Project Tiger initiatives were only moderately successful.<sup>28</sup>

<b>Figure 4</b> <b>Pre- and Post-Revitalized Pilot Training Program Attrition</b>				
Time	Preflight Attrition	Primary Attrition	Basic SE Attrition	Basic ME Attrition
Jan-Jun 1952	--	27.0%	13.5%	5.0%
Jul-Dec 1952	--	27.5%	9.5%	2.2%
Jan-Jun 1953	12.7%	24.4%	11.4%	3.5%
Jul-Dec 1953	14.1%	22.5%	13.8%	7.5%
Jan-Jun 1954	13.1%	20.0%	14.3%	11.2%
Jul-Dec 1954	10.4%	17.5%	9.2%	6.8%
Source: Hist, ATC, Jan-Jun 1954, p. 98; Hist, ATC, Jul-Dec 1954, pp. 147, 164, 171.				

When ATC implemented the new training program in November 1952, it set attrition goals at 7 percent for preflight, 17 percent for primary, and 4 percent for basic, with an overall undergraduate rate of 26 percent. However, during the first 18 months of operation, preflight attrition ranged between 12.7 percent and 14.1 percent. While attrition in primary declined from 27.5 percent in the last half of 1952 to 20 percent during the last half of 1954, providing evidence that preflight had some beneficial

<sup>28</sup> ATC History, Jul-Dec 52, pp. 54-58, 66; ATC History, Jan-Jun 54, p. 102.

effect on primary eliminations, attrition goals were not met. Unfortunately, attrition in basic during that same time period increased from 9.5 to 14.3 percent in single-engine training and 2.2 to 11.2 percent in multi-engine. After examining the problem, the command discovered that self-elimination rates (students who didn't want to fly) had increased, replacing lack of motivation as a major cause of attrition. ATC analysts believed most of those who self-eliminated were student officers with college degrees who believed they were qualified for desirable civilian jobs; by self-eliminating, they had a way to get back to civilian life. Clearly, permanent reductions in attrition remained elusive, but other ways of "fixing" the attrition program existed. On 1 July 1954, the start of FY55, the Air Force raised attrition rates to a more realistic level. Beginning with Class 55-Q, the rates for primary increased to 22 percent (up from 17 percent) and 9 percent (up from 4) in basic for an overall total of 29 percent.<sup>29</sup>

When the Air Force instituted the revitalized pilot training program in 1952, ATC officials regarded it as a considerable improvement over the previous system; however, they acknowledged that the use of aircraft not entirely suitable to the mission diminished the four-phase program's potential value. The ever-increasing speed and improved performance of the newest jets coming into the inventory required the use of faster and more responsive trainers in primary training. Air Force officials chose the PA-18 on an interim basis as the best available light aircraft when it decided to add light plane screening to primary, planning on replacing it with the T-34 as the new trainer became available. At 2,900 pounds and capable of flying at speeds of 120 knots, the T-34 was more like subsequent training aircraft than the PA-18, which weighed only 1,600 pounds and flew at 72 knots (the T-6 weighed 5,300 pounds and flew at speeds of 134 knots while the T-28 weighed 7,500 pounds and averaged 149 knots).<sup>30</sup>

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<sup>29</sup> ATC History, Jul-Dec 53, p. 88; ATC History, Jan-Jun 54, pp. 73, 98, 100-101; FTAF History, Jan-Jun 54, pp. 42, 46-49.

<sup>30</sup> The P-80 was introduced in 1945, the P-84 in 1947, and the F-86 in 1948. The Pursuit designation changed to Fighter in 1948. ATC History, Jan-Jun 54, pp. 78-79.

The 1952 plan called for converting the PA-18s and T-6s, beginning with the introduction of the T-34 in April 1954, with the retirement of the Piper Cubs and T-6s to be completed by July 1956. Student pilots would then fly the T-34 in light plane screening and the T-28 and its successor, the TX (ultimately the T-37), for the rest of primary. Specifications called for a side-by-side, two-seat trainer with an average speed of 330 miles per hour, tricycle landing gear, and a minimum endurance of two hours in



the air. The T-33 and its successor, the TZ jet, would be used in basic flight training. Air Force officials planned the high performance TZ (ultimately the T-38) to have tandem seating and be capable

of speeds in the Mach 1 range (600 miles per hour).<sup>31</sup>

On 21 January 1954, FTAf announced that the change out of the T-34 for the PA-18 would begin on 18 June 1954 with Class 55-P. The switch actually happened earlier than planned, and the school at Marana, Arizona, began using the heavier and faster T-34 on 11 May with Class 55-M. With the switch, FTAf increased flying time in the light plane screening portion of primary to 40 hours (12 hours in the pre-solo phase, 22 hours of contact proficiency, and 6 hours of aerobatics). In addition to screening trainees for fear of flying and airsickness problems, the T-34 had an additional advantage over the PA-18 in that it could more adequately screen for flying deficiencies since its curriculum included acrobatics like loops, Immelman loops, slow rolls, and barrel rolls. The command-wide switch from the PA-18 and T-6 to the T-34 and T-28 didn't occur until August 1956 when the school at Bartow Air Base in Florida completed its conversion.<sup>32</sup>

<sup>31</sup> ATC History, Jul-Dec 52, pp. 52-53.

<sup>32</sup> FTAf History, Jan-Jun 54, pp. 56-62; History (S/RD), ATC, Jul-Dec 56, p. 38, info used is not S/RD.

## **AFROTC and the Flight Indoctrination Program**

Early in 1951, Maj Gen William McKee, the Assistant Vice Chief of Staff, approved a long-range plan to transform AFROTC into the largest commissioning source of active duty officers. All of these officers would have college degrees, an important consideration for a service driven by technology. If this occurred and AFROTC became a major source for the pilot training program, ATC officials believed a desire for flying training should become a pre-requisite for entry into AFROTC. Unfortunately, in 1951 and 1952, only about 14 percent of AFROTC cadets volunteered for flying training, significantly lower than the 60 percent goal. In a program approved in November 1952, cadets began receiving a lot of pro-flying information during their last two years of college, supplemented by orientation flights in training aircraft during the summer encampments between their junior and senior years of college.<sup>33</sup>

Previously, all officers, regardless of commissioning source and extent of military experience, entered flying training at primary. However, as the number of AFROTC graduates in pilot training increased (the goal was a ratio of 65 AFROTC graduates to every 35 aviation cadets), FTAF officials discovered they had insufficient experience and military training to permit direct entry into primary flying training. They recommended establishment of a formal preflight course to fill the “gap” between training provided at the university and training begun in the Air Force, to help these young officers get in the proper mindset for flying training and to motivate them to aspire to spend a career flying in the Air Force. On 6 July 1954, HQ USAF authorized a four-week preflight course for all ROTC graduates scheduled for pilot or observer training. Conducted at Lackland, the course roughly paralleled the 12-week course given to aviation cadets. Lackland began teaching the course on 17 September, and 1,471 AFROTC officers had completed it by the end of 1954. FTAF conducted a

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<sup>33</sup> ATC History, Jul-Dec 52, p. 59; Vance O. Mitchell, *Air Force Officers Personnel Policy Development, 1944-1974*, pp. 108, 114-115.

comparison in March 1955 between graduates of the preflight course and those who entered primary directly. The study compared 541 student officers who had not completed the preflight course (Group A) to 538 who had (Group B). While the difference in total attrition between the two groups was negligible (18 percent for Group A versus 17 percent for Group B), the difference in attrition due to self-elimination was more significant—7 percent for Group A as compared to 2 percent for Group B. Overall, the evaluation revealed that the preflight students scored higher in all areas, especially in attitude, motivation levels, knowledge of service, and practical experience. ATC decided to keep the course.<sup>34</sup>

The move to encourage AFROTC cadets toward careers as pilots received a big push in the summer of 1956 when Congress passed and President Dwight Eisenhower signed Public Law 879, authorizing the Air Force to provide light plane flying instruction to senior AFROTC cadets similar to that provided in the World War II Civilian Pilot Training Program. The goal of the Flight Instruction Program (FIP) was to motivate cadets toward a flying career, foster their feeling of participation in the Air Force, and provide a screening device to identify those pilot training applicants who lacked the basic aptitude for Air Force pilot training. Originally, Air Force officials hoped to offer FIP at 179 schools across the country to reach 2,880 cadets, but the budget never funded the program sufficiently to reach that level of participation. Air University, which picked up responsibility for AFROTC in August 1952, approved the first contracts early in December 1956. By June 1957, the Air Force had contracts with 41 colleges and universities across the country, which in turn contracted with nearby private flight schools to provide CAA-approved flight training. At the end of 1959, this number had increased to 150 contracts at over 163 schools, providing some 1,650 cadets with rudimentary flying training. Originally

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<sup>34</sup> ATC History, Jul-Dec 54, pp. 138, 141-144; FTAF History, Jul-Dec 54, pp. 75-76, 81-82; FTAF History, Jan-Jun 55, pp. 107-109 and SD III-5 in this history.

authorized for four years and continued incrementally after that, Congress made FIP permanent in November 1964.<sup>35</sup>

By November 1958, ATC was able to draw some initial conclusions about the effect FIP participation had on primary flight training attrition. The primary attrition rates for Classes 59-C through 59-G (based on 380 FIP participants, 1,012 non-FIP AFROTC graduates, and 1,125 other American pilot candidates) were as follows: 6.3 percent for AFROTC FIP graduates, 24.7 percent for AFROTC non-FIP graduates, and 18.5 percent for the other American pilot candidates. After these early results, ATC officials believed FIP provided an inexpensive way to identify those not qualified for pilot training while reducing primary flying attrition. Drawbacks existed, however: the program did not produce a standardized graduate and participants had to unlearn a variety of bad flying habits during primary training. Nevertheless, HQ ATC Primary Training Division personnel were pleased with these first results.<sup>36</sup>

These initial findings were validated in subsequent years. In the first 10 years of the program, 14,000 ROTC pilot candidates took part in FIP; and during this period, it proved to be an effective screening device, greatly enhancing its participants' chances of completing UPT.<sup>37</sup>

### **Post-Korean War Fine-Tuning**

With the armistice ending the conflict in Korea in 1953, Congress once again reduced funding for defense, although this time America's military did not drawdown as precipitously as it had at the end of World War II. This was a time of continual fine tuning

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<sup>35</sup> AU History, Jul-Dec 56, pp 186-187; AU History, Jan-Jun 57, p. 44; AU History, Jul-Dec 58, pp. 40-41; AU History, Jul-Dec 59, see FY60/2 Quarterly Program Summary in Vol II; Capt Richard H. Jackson, "The AFROTC FIP—Success or Failure," ACSC, Jun 66.

<sup>36</sup> Brfg, ATC/DO, "Air Force ROTC Flight Instruction Program," 17 Nov 58.

<sup>37</sup> Capt Richard H. Jackson, "The AFROTC FIP—Success or Failure," ACSC, Jun 66.



<p style="text-align: center;"><b>Figure 5</b> <b>ROTC Primary UPT Attrition</b></p>							
<b>UPT Attrition</b>	<b>FY60</b>	<b>FY61</b>	<b>FY62</b>	<b>FY63</b>	<b>FY64</b>	<b>FY65</b>	<b>FY66</b>
FIP Students	18.1%	20.8%	17.0%	14.0%	15.6%	9.6%	13.1%
Non-FIP Students	34.8%	44.8%	33.7%	23.0%	24.8%	15.2%	31.4%
Total AF UPT	20%	19.4%	9%	10.3%	11.2%	12.7%	*
<p>* Information was unavailable. Source: Capt R. H. Jackson, "The AFROTC FIP—Success or Failure," ACSC, Jun 66.</p>							

to the Air Force's pilot training program, including establishment of the Air Force Academy, transition to an all-jet training program, and closure of the contract primary flying schools. Happily, however, the primary attrition rate finally began showing a downward trend: by the end of 1954, preflight attrition was at 10.4 percent, down from 13.1 percent; primary attrition was 17.5 percent, down from 20 percent; and the combined single and multi engine basic attrition fell from 13.5 percent to 8.4 percent. On 16 September 1954, with ATC on track to meet its planned production rate for the first time since World War II, HQ USAF lowered subsequent production goals but said it was looking for an increase in the quality of trainees to accompany the decrease in quantity. Since many considered quality to be proportional to the amount of flying time given during training, ATC officials planned to increase flying time and decrease class sizes. Only 338 students would enter 8 primary classes per year instead of 426 students in 23 classes. With the change scheduled to go into effect with classes beginning July 1956, ATC increased flying time in primary and jet time in basic single-engine training. Flying time in the T-34 remained at 40 hours while time in the T-28 went from 90 to 100 hours, increasing time in contract proficiency and

navigation while giving the instructors 3 hours of optional training based on the students' needs.<sup>38</sup>

Congress authorized creation of the Air Force Academy in 1954. Harold E. Talbott, then Secretary of the Air Force, selected a site near Colorado Springs, Colorado; and on 11 July 1955, the first class of 306 men began attending classes at the temporary site at Lowry AFB, Colorado. ATC began offering Pilot Indoctrination Training (PIT), later called the Pilot Indoctrination Program (PIP), for the Academy cadets almost immediately. Between 2 July and 21 September 1956, the first 240 cadets were airlifted from Colorado to four of the command's primary schools (Bainbridge, Graham, Moore, and Marana) where cadets received 10 actual flying hours (5 in the T-34 and 5 in the T-28) and about 30 hours of academics—enough to provide an orientation and general knowledge of the aircraft rather than proficiency. They flew dual sorties only and were not permitted to solo. Instructors performed aerobatics only upon student request. Academy graduates identified for pilot training entered primary training for flight screening.<sup>39</sup>

As the DOD budget continued to fall, HQ USAF directed cuts in the pilot production rates beginning in FY58. In response, FTAF conducted capability studies, concluding that it needed only seven primary schools to meet the reduced production requirements. Its officials recommended closing the schools at Marana and Stallings, which HQ USAF approved. ATC inactivated Marana in October 1957 and Stallings in November. But the decreases didn't stop there. The Air Staff cut FY 59-61 production rates to 3,800, and late in 1958 began using a 2,300 number as a basis for planning to allow for an increase of

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<sup>38</sup> ATC History, Jul-Dec 54, pp. 140, 145, 164, 171; FTAF History, Jul-Dec 54, p. 66; FTAF History (FOUO), Jul-Dec 56, p. 76, info used is not FOUO.

<sup>39</sup> USAF Fact Sheet, Academy History, accessed at <http://www.usafa.af.mil/pa/factsheets/history.htm> on 20 Nov 03; FTAF History (FOUO) Jan-Jun 56, pp. 140-141, info used is not FOUO; FTAF History (FOUO), Jul-Dec 56, pp. 91-92, info used is not FOUO.

additional 38 flying hours in primary and basic. ATC began looking at the content and length of training for a complex of six primary and six basic installations. Officials considered increasing the course length for a higher quality student and devising a new curriculum for the upcoming T-37 and T-38 training.<sup>40</sup>

In 1958, ATC officials began looking at the possibility of establishing an “all-through” jet primary. As T-37 training at Bainbridge began on 21 January 1958 with Class 59-9, discussion with supervisors and instructor pilots indicated that students could solo in the T-37 almost as early as in the T-34. Furthermore, more and more AFROTC officers entered primary training with 30-40 hours of light-plane time and another 30 hours in the T-34. They had learned techniques peculiar to reciprocating, single-engine aircraft that required 15-20 hours flying time to unlearn once they began flying the T-37. Other advantages to an all jet primary included a smaller inventory of aircraft, with associated reduced levels of supply, support, and maintenance, and fewer flying hours—all requiring less funding. ATC thought it could reduce the first phase in primary by 50 hours or eliminate it all together. Bainbridge created a test class with 60-D on 19 November 1958. “All-through” students would receive 115 flying hours only in the T-37 in a 98-day training course, immediately followed by another 15 hours of continuation flying over 10 training days. The control group continued with the 130 hours program in 108 training days—30 hours in the T-34 and 100 hours in the T-37. Upon completion of the test in the summer of 1959, Bainbridge leaders recommended going to all T-37 training. They also wanted to include formation flying and 1½ hours of tactical recovery on instruments for a total of 130 flying hours.<sup>41</sup>

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<sup>40</sup> FTAF History (FOUO), Jan-Jun 57, p. 26, info used is not FOUO; History (S/RD), ATC, Jul-Dec 58, p. 28, info used is not S/RD.

<sup>41</sup> History (S/RD), ATC, Jul-Dec 58, pp. 26-27, 36-37, info used is not S/RD; History (FOUO), ATC, Jan-Jun 59, pp. 41-43, info used is not FOUO.

<p style="text-align: center;"><b>Figure 6</b>  <b>Pilot Training Attrition</b>  <b>1955-1959</b></p>				
Time	Preflight Attrition	Primary Attrition	Basic SE Attrition	Basic ME Attrition
Jan-Jun 1955	8.4%	21.1%	14.0%	12.4%
Jul-Dec 1955	7.0%	23.5%	11.0%	8.1%
Jan-Jun 1956	8.1%	19.4%	11.7%	7.2%
Jul-Dec 1956	7.9%	18.3%	14.1%	6.0%
Jan-Jun 1957	10.0%	21.8%	16.6%	5.7%
Jul-Dec 1957	17.6%	38.6%	16.9%	7.3%
Jan-Jun 1958	9.4%	28.9%	17.6%	8.0%
Jul-Dec 1958	15.3%	20.8%	12.2%	7.3%
Jan-Jun 1959	15.0%	25.2%	16.3%	7.1%
Jul-Dec 1959	12.8%	26.8%	32.2%*	N/A
<p>* Total basic attrition figure. Multi-engine basic training phased out as ATC's B-25s went into retirement.</p> <p>Sources: ATC Histories, 1955-1959.</p>				

As pilot production requirements continued to fall, ATC looked for a new training concept—combining preflight, primary, and basic instruction at the same locations. In March 1960, the Secretary of the Air Force approved Consolidated Pilot Training (CPT), which would go into effect in March 1961. ATC also wanted to replace the civilian flying instructors with military officers, phasing out the contracted primary schools. The command selected six bases for CPT: Craig, Webb, Vance, Reese, Williams, and Moody, adding Laredo by the end of the year. All training at the remaining contract primary schools, Graham, Moore, Spence, Bartow, Malden, and Bainbridge, ended on 21 December. Students stopped flying the T-34s, used since 1954, after November 1960, ending the ATC-taught portion of flight screening. Consisting of three phases—preflight (transferred from Lackland to the pilot and navigator schools), primary, and basic, the all-jet (T-37 and T-33) undergraduate pilot training (UPT) program began on 13 March 1961 with the entry of Class 62-F

into preflight. Primary flying training (with no light plane screening) using the T-37 started on 3 April. The new UPT curriculum consisted of 231 training days over 55 calendar weeks: a 303-hour course with 132 flying hours for the T-37 portion in Phase I and a 310-hour course with 130 flying hours in the T-33 for Phase II. Despite overcrowding at the UPT bases and insufficient resources, instructor pilots, and flying hours, ATC officials were pleased with the early results of UPT: attrition and accident rates were down and quality was up (the actual attrition rate in January-June 1962 was 16.2 percent, vice 20 percent, in primary and 5.3 percent, instead of 10 percent, in basic). As the command gained more experience in the all-jet UPT, its officials attributed the lower attrition rates to better educated pilot candidates, such as the Academy graduates, and conducting all training (preflight, primary, and basic) on one base. Interestingly enough, another factor mentioned was the increased percentage of ROTC graduates who had gone through FIP training in light aircraft prior to entry to UPT.<sup>42</sup>

As early as August 1961, the Air Force considered converting PIT into a flight-training program where Academy students would learn to fly rather than a flight indoctrination program that showed them rudimentary maneuvers only. Air Force leaders wanted the training to begin with the Air Force Academy Class of 1963. Training officials looked at a 40-flying-hour program for those who would volunteer to learn to fly instead of taking leave during the summer and a 10-hour orientation program for all others. Since Congress had not yet approved construction of an adequate airfield at the Academy, HQ USAF directed ATC to conduct the initial training.

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<sup>42</sup> Lackland's last preflight class ended in May 1960, and ATC discontinued the school on 1 July. T-38s began arriving in ATC in 1961. The first students to fly the T-38 were members of Webb AFB's Class 62-F. History (S/RD), ATC, Jul-Dec 58, pp. 26-28, info used is not S/RD; History (S/NF/RD), ATC, Jan-Jun 60, pp. 83-85, 196, info used is not S/NF/RD; History (S/NF), ATC, Jul-Dec 60, pp. 95-99, info used is not S/NF; History, ATC, Jan-Jun 60, p. 100; History (S/RD), ATC, Jul-Dec 61, pp. 121-121, info used is not S/RD; History (S/RD), ATC, Jan-Jun 62, p. 102, info used is not S/RD.

In response, ATC proposed 15 hours of dual instruction in the T-37 for 122 cadets in two increments. The curriculum consisted of the first 15 hours of the primary syllabus with some modifications to the academic portion. The course was taught for the first time at Craig, Laredo, Moody, Vance, and Laughlin in two sessions during the summer of 1962.<sup>43</sup>

<b>Figure 7</b>			
<b>Total Pilot Training Attrition</b>			
<b>Year</b>	<b>Entry</b>	<b>Eliminations</b>	<b>Attrition Rate</b>
FY1960	3,606	1,319	36.6%
FY1961	3,318	1,182	35.6%
FY1962	2,060	494	24.0%
FY1963	2,214	514	23.2%
FY1964	2,422	505	20.8%
FY1965	2,672	420	15.7%
The dramatic drop in attrition rates beginning in FY62 coincides with the end of the aviation cadet program in 1961 and the closure of Officer Candidate School in 1963. All subsequent pilot candidates had to have college degrees. Source: Chart, AETC/HO, "Undergraduate Pilot Attrition Rates, 1941-1980," <i>ca.</i> 1980.			

### **The Vietnam War and Light Plane Screening Revisited**

As ATC officials began looking at UPT for ways to improve it late in 1962, HQ USAF announced an increase in programmed pilot production, using the currently available training resources, to replace many of the World War II-era pilots who were approaching retirement. The existing program was a compromise between the need for student training and too few flying hours, instructor pilots, and overcrowding. To ATC, it seemed as if economy was frequently valued more than quality. Nevertheless, with limited resources available, the Air Force proposed reducing the existing 264-flying hour UPT course (132 flying hours in both primary and basic) to 120 hours in each

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<sup>43</sup> History (S/RD), ATC, Jan-Jun 62, pp. 109-110, info used is not S/RD.

phase, later suggesting 30 flying hours in a contracted T-34 phase, 90 flying hours in the T-37, and 120 hours in the T-33 or T-38. While the ATC commander, Lt Gen James E. Briggs, initially opposed any kind of contract training and considered the use of the T-34 as “retrogressive,” he later modified his opposition when HQ USAF said it would offset any loss of quality by decreasing the T-37 flying time from 120 to 90 hours and replacing it with “an initial flight indoctrination course of 30 hours in light, conventional aircraft.” The Air Force selected the Cessna 172F (the Air Force designation was T-41A) as the light plane, purchasing 170 of the aircraft for \$1.24 million.<sup>44</sup>



**In 1965, the Air Force returned to a light plane screening program using the T-41A.**

After five years of no indoctrination program, the Air Force switched back to providing light plane screening on 29 July 1965 with Class 67-A. The revised UPT program consisted of 53 weeks of training, replacing the old 55-week program. Private contractors near the UPT bases provided 30 hours of training in the T-41, which began on 5 August. An 81-day primary phase with 90 flying hours preceded basic with 108 training days and 120 flying hours. Late in 1965, ATC officials stated that the T-41 was proving to be a good screening device that eliminated students without the motivation or aptitude to become pilots. Attrition figures seemed to bear that out as total attrition (including active duty Air Force, Air National Guard, and foreign students) after primary dropped from 23.7 percent between July and December 1965 to 10.5 percent for calendar year 1966.

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<sup>44</sup> History, ATC , Jan-Jun 64, pp. 126-129.



**Civilian contract instructors taught light plane screening at airports near each of ATC's UPT bases.**

Nevertheless, they firmly believed the 30 hours in the T-41 didn't really make up for the loss of T-37 flying hours.<sup>45</sup>

By the mid-1960s, with the war in Southeast Asia heating up, HQ USAF's emphasis once again switched to producing more pilots. To reach the stated goal for FY68, the Air Force announced Randolph would become the ninth UPT base, beginning on 23 March 1967 with 40 students in Class 68-06. Furthermore, ATC entered the first 13 USAF students in the German Air Force training program at

Sheppard AFB, Texas, on 21 April 1967. Command officials reviewed other options as well, but all of them kept the 30-hour flight-screening phase in the T-41. They reduced the T-41 phase of primary training for those ROTC FIP graduates from 30 to 18 flying hours. On 5 June 1967, in an attempt to devise other ways of changing the existing UPT program to save resources, HQ USAF proposed separating T-41 training from UPT and centralizing it at one location. Hondo, Texas, was considered to be the best site for centralized flight screening. Consolidation at Hondo would be especially beneficial for the Officer Training School (OTS) pilot trainees, who historically washed out of UPT at much higher rates than their counterparts from AFROTC and the Air Force Academy who had participated in some form of indoctrination program.<sup>46</sup>

<sup>45</sup> History (S/RD/FOUO), ATC, Jan-Dec 65, p. 181, info used is not S/RD/FOUO.

<sup>46</sup> History (S/NF), ATC, Jan-Jun 67, pp. 88, 190, 199-200, info used is not S/NF; History (S/NF), ATC, Jan-Jun 68, pp. 178-179, info used is not S/NF.



While ATC was against centralizing T-41 training because of the increased costs associated with the longer pipeline times involved, that didn't address the need to provide some sort of flight training for OTS. On 21 November 1967, HQ USAF stated it wanted a 15-18-flying-hour program in the T-41 taught at OTS just like that taught at the rest of the UPT bases. Once the Academy had its program up and running, students entering UPT from all three commissioning sources would begin at a similar level of experience. Command officials reluctantly looked into it, but several years would pass before a centralized program at OTS would become a reality.<sup>47</sup>

Air Force Academy efforts to establish a light plane training program for the cadets at Peterson Field, Colorado, were finally successful. As previously mentioned, ATC had been providing PIT to Academy cadets in the summer since 1956, but the demands for increased pilot production had so saturated the command's UPT resources, it couldn't handle it any more. Training at Peterson Field in T-41Cs began on 5 January 1968 with the dual goal of motivating physically qualified students toward a rated career and serving as a form of flight screening. The 78-training-hour Academy syllabus included 36.5 flying hours, a significant increase over the 10 hours they had been receiving at the various UPT bases during the summer. In the first six months of operation, 199 cadets took advantage of the program.<sup>48</sup>

As production requirements continued to climb, HQ USAF and ATC investigated various ways to train more pilots. One of those was something called "syllabus refinements," i.e., shortening the length of the course. On 1 July 1970, all classes

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<sup>47</sup> History (S/NF), ATC, Jan-Jun 68, pp. 196, 200, info used is not S/NF.

<sup>48</sup> History (S/NF), ATC, Jan-Jun 67, pp. 208-209, info used is not S/NF; History (S/NF/FOUO), ATC, Jul-Dec 67, pp. 214-215, info used is not S/NF/FOUO; History (S/NF), ATC, Jan-Jun 68, pp. 193-195, info used is not S/NF.

graduated under the new 208.5 flying hour, 48-week program, the first major change to the 53-week program since its establishment in July 1965. Designed to increase training effectiveness while decreasing costs, the new syllabus cut T-41 flying hours from 18-30 to 16. FIP and PIP students and those OTS graduates and rated and non-rated officers who possessed a private pilot's license had flown 18 hours in the T-41, while students with no previous flying experience flew the full 30 hours. The new syllabus set flying hours in the T-37 at 90 and 110 in the T-38. With the change to only 16 hours in flight screening, no allowance was made for attrition, and students were allowed to proceed on a proficiency basis with a minimum of 1.5 solo hours.<sup>49</sup>

### Centralized Flight Screening

A study of OTS graduate attrition rates in UPT between June 1968 and December 1970 revealed a continuing upward trend—the number of eliminees grew from 637 to 1,116 during



**T-41Cs at a contracted flying school that provided flight training for Air Force Academy cadets.**

that time, while the entries into the T-41 phase from OTS decreased from 586 to 335. By

December 1970, OTS graduates with no previous flight training were responsible for 81 percent of

the T-41 attrition.<sup>50</sup>

<sup>49</sup> History (S/NF), ATC, FY70, p. 224, info used is not S/NF; History (S/NF/FOUO), ATC, FY71, pp. 176, 184, info used is not S/NF/FOUO.

<sup>50</sup> History (S/NF), ATC, FY72, p. 201, info used is not S/NF.

<p style="text-align: center;"><b>Figure 8</b> <b>Attrition Rate by Source of Commissioning</b></p>				
<b>Source of Commission</b>	<b>FY69 Attrition</b>	<b>FY70 Attrition</b>	<b>FY71 Attrition</b>	<b>FY72 Attrition</b>
Rated Officers	5.9%	2.6%	4.9%	0%
AFROTC	6.0%	7.0%	5.6%	3.9%
AFA	3.9%	6.6%	1.7%	1.0%
OTS	17.0%	17.6%	18.6%	14.7%
Non-Rated Officers	16.4%	16.1%	8.6%	4.1%
Total USAF Attrition	25.9%	27.6%	29.2%	27.9%
<p>Source: History (S/NF/FOUO), ATC, FY71, p. 185, info used is not S/NF/FOUO; History (FOUO/PV), ATC, 1989, p. 328, info used is not FOUO/PV.</p>				

Obviously, something had to be done. Changing its original opposition, ATC now recommended a centralized flight screening program (FSP) in conjunction with OTS. In a reversal to their original claims, staff members said that one centralized location would help reduce costs by going from 10 locations near the UPT bases to 1. Significant reductions in overall attrition was another attraction with a goal of reducing the current 27-29 percent attrition rates to 10 percent by the end of FY77. The Air Force Chief of Staff didn't respond immediately to ATC's suggestion, but he did approve the concept of entering ROTC FIP and Academy PIP graduates directly into the T-37 phase at one test base, Webb. Vance would serve as the control. The test had just gotten underway when the civilian instructors at Moody threatened a strike in October 1971. While negotiations between management and the instructors averted the strike, the very threat made the ATC commander want to expedite consolidation even before the test ended. Consequently, ATC devised a three-phased approach: 1) consolidate all T-41 flying into a Centralized Flight Screening Program for OTS, ROTC graduates who did not

participate in FIP, nonrated officers, and foreign Military Assistance Program students; 2) incorporate concurrent testing and validation of other screening devices such as simulators, psychological testing, etc.; and 3) introduce certain UPT-related training as part of the screening. When results from the Webb test showed no adverse effect in the performance of those FIP and PIP graduates who entered directly into the T-37 phase of training, the ATC staff recommended going to a centralized flight screening program. Some even postulated that if a joint ATC and Brooks AFB's Air Force Human Resources Laboratory (AFHRL) research effort to validate the use of ground-based screening devices was successful, the command might be able to eliminate the T-41 portion of flight screening entirely.<sup>51</sup>

Believing the move would save \$2.3 million, ATC's commander, Lt Gen George B. Simler, wanted to implement the first phase of the proposed approach immediately, viewing the other two phases still in the conceptual stage. On 10 March 1972, General Michael E. Ryan, Air Force Chief of Staff, approved the three-phased approach, starting with centralized T-41 flight screening. As a result, the ATC staff created a three-week program with 14 flying hours. Civilian contractors at Hondo Field would provide both flight instruction and aircraft maintenance along with 55 Air Force personnel who would supervise flying, conduct ground training, and provide base support. The centralized flight screening program under OTS supervision began on 17 May 1973.<sup>52</sup>

### **Pilot Selection Research**

Between 1965 and 1973, T-41 flight screening was an integral part of UPT. Nevertheless, it was only partially successful since a large number of student pilots still washed out of the more expensive phases of training. Overall, total UPT attrition for active duty Air Force personnel had hovered around 25 percent in the

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<sup>51</sup> History (S/NF), ATC, FY72, pp. 201-204, info used is not S/NF.

<sup>52</sup> *Ibid*, p. 206, info used is not S/NF; History (FOUO), ATC, FY73, p. 185, info used is not FOUO.

late 1960s, rising to 29.2 percent in FY71. However, DOD continued to squeeze the Air Force budget tighter and tighter in the early 1970s, prompting ATC to search for the optimum balance between training needs and training costs. An ATC mission analysis report published in January 1972 concluded that a 10 percent attrition goal was realistic with implementation of a properly designed screening and selection system. Simply put, attrition equaled wasted time and money, costing an average of \$16,000 per UPT eliminee. This became an increasingly important factor as funding continued to be tight, the Arab oil embargo and production cutbacks forced the price of fuel to skyrocket, and rampant inflation eroded actual purchasing power.<sup>53</sup>

Centralizing flight screening at one location was one approach to cutting attrition in UPT. Another was the testing and validating other screening methods to identify successful pilot candidates who would graduate from UPT. In May 1973, ATC implemented Project Hasty Blue on the assumption that T-41 flight screening could be altered, reduced, and eventually replaced by less expensive ground-based screening (GBS) methods. Its objective was to determine the optimum use of T-41 flight screening, simulators, psychomotor assessments, and the Air Force Officer Qualification Test as screening devices. An early Hasty Blue finding was that students who earned their private pilot's licenses prior to entering training usually completed UPT successfully. In September 1974, ATC amended FSP to exempt students with private pilot's licenses from T-41 flight screening.<sup>54</sup>

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<sup>53</sup> History (FOUO), ATC, FY73, p. 186, info used is not FOUO; Plan, ATC, "Plan for Centralized Selection of Students for UPT Project," *ca.* May 73, SD IV 42 in the FY73 History; Study, Lt Col Melvin S. Majesty, SMSO, "New Centralized Selection System for Air Force Pilots," Nov 73.

<sup>54</sup> History (FOUO), ATC, FY75, p. 95, info used is not FOUO. This became increasingly important as the United States attempted to recover from the 1973-1974 crisis generated by the Arab world's oil embargo, following American aid to Israel during the October 1973 Yom Kippur War.

<p style="text-align: center;"><b>Figure 9</b> <b>Total USAF Pilot Training Attrition</b></p>			
<b>Year</b>	<b>Entries</b>	<b>Eliminations</b>	<b>Attrition Rate</b>
FY64	2,114	439	20.7%
FY65	2,359	367	15.6%
FY66	2,453	564	23.0%
FY67	3,758	1,056	28.1%
FY68	4,039	976	24.2%
FY69	4,230	1,093	25.9%
FY70	4,769	1,314	27.6%
FY71	5,383	1,574	29.2%
FY72	5,154	1,436	27.9%
FY73	3,746	1,023	27.3%
Source: Chart, AETC/HO, "Undergraduate Pilot Attrition Rates, 1941-1980," <i>ca.</i> 1980.			

One of the more promising ideas from Hasty Blue concerned the use of a simple flight simulator—the General Aviation Training (GAT-1)—that showed the scores students received in the simulator were generally predictive of the grades they would receive flying the T-41. A January 1976 report on initial tests conducted at OTS concluded that the GAT-1 could either be used either as a sole method for selecting pilot candidates or to augment current T-41 flight screening. In a letter dated 9 February 1976 to the HQ USAF Deputy Chief of Staff (DCS) for Personnel, the ATC commander, Lt Gen John W. Roberts, said the command planned to implement GBS on 21 May, discontinuing both the T-41 Flight Screening Program and Security Assistance Program Training courses, unless the Air Staff took exception. The primary reason behind the request was money: ATC claimed it could save \$773,000 in FY77 alone by

the move and increase that amount to \$1.5 million when attrition reached the desired 10 percent figure.<sup>55</sup>

Despite the anticipated cost savings, the Air Staff took exception to the plan, claiming that the Air Force should have just one type of screening program. All three commissioning sources, OTS, AFROTC, and the Air Force Academy, currently used light plane screening to select their pilot candidates. If ATC replaced flight screening with GBS methods, then two separate systems would exist, flight screening for ROTC and Academy cadets and GBS for everyone else. This was an eventuality HQ USAF officials wanted to avoid. Although ATC staff members conceded that both the Air Force Academy PIT and AFROTC FIP programs also performed motivational and recruiting functions, the appeal of GBS remained strong. On 12 July 1976, ATC requested permission to start a test on 1 October to collect GBS test data on the results from the revised Air Force Officer Qualifying Test, GAT-1 simulator, and psychomotor test given to OTS, ROTC, and Air Force Academy students. But a problem developed when ATC's efforts failed to establish a satisfactory schedule with the Academy for testing cadets. Consequently, ATC continued to gather data from the OTS students, biding its time.<sup>56</sup>

In 1979, ATC established an intercommand working group with representatives from the Air Force Academy, AFROTC, AFHRL, and HQ USAF DSC for Manpower and Personnel to construct a research plan to test GBS and light plane screening to determine the relative effectiveness of each. All potential pilot trainees would receive GBS; some would then enter UPT directly, some after modified light plane screening, and the

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<sup>55</sup> In 1976 the U. S. Government changed its fiscal year. Previously, the fiscal year ran from June of one year to July of the next. Beginning with FY77, the fiscal year now ran from October to the following September. History (FOUO), ATC, FY75, p. 96, info used is not FOUO; History (FOUO), ATC, FY76, p. 134, info used is not FOUO.

<sup>56</sup> History (FOUO), ATC, FY76, pp. 134-136, info used is not FOUO; History, ATC (FOUO), 1977, pp. 105-107, info used is not FOUO.

rest after normal light plane screening. The group tested ROTC candidates between February and March, Air Force Academy cadets in July and August, and flight screening program trainees in September 1979. Results would be reviewed only after a sizeable group completed UPT and advanced training and gained one year of operational experience.<sup>57</sup>

Between 1978 and 1981, AFHRL tested approximately 3,500 trainees from all three commissioning sources, recording the pass/fail results and reasons for elimination from UPT for comparison with the psychomotor and other GBS test scores to determine if these tests could accurately predict success in UPT. Because of the long lead times involved before AFROTC or Air Force Academy graduates entered UPT, the first study data came from OTS graduates. The early results held promise, showing that a combination of flight screening and psychomotor screening decreased the overall UPT attrition for OTS officers by 2 percent. In December 1982, AFHRL officials briefed the ATC vice commander on these preliminary results, claiming that psychomotor testing could adequately predict success in UPT, but said they would continue analyzing the data to determine the predictive value of the tests when combined with AFOQT scores and flight screening results. AFHRL also wanted to administer a battery of tests known as the Basic Attributes Test (BAT) to OTS students, which included attention prioritization, task saturation, decision making, etc., and track these students through UPT, advanced training, and their first operational assignment.<sup>58</sup>

By August 1983, AFHRL had completed most of the data analysis. An ATC sponsored working group, chartered after the December briefing, made three recommendations. Pilot selection decisions for OTS graduates should be made after flight screening, based on a combination of AFOQT and psychomotor scores, flight screening results, and age. AFHRL researchers discovered that other variables, such as race, possession of a technical degree,

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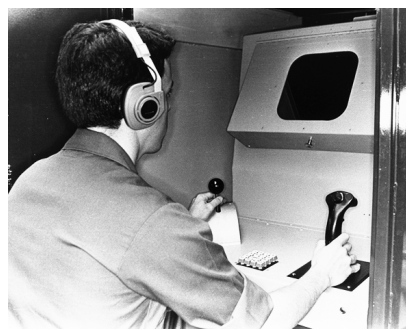
<sup>57</sup> See note above; History, ATC (FOUO), 1979, pp. 110-111, info used is not FOUO.

<sup>58</sup> History (FOUO/PV), ATC, 1984, p. 140, info used is not FOUO/PV.



marital status, and sex, did not add any predictive value. Another recommendation centered on the acquisition of vans to transport the testing equipment for pilot selection screening around the country to administer the psychomotor exams at various ROTC detachments. And finally, the group believed that use of this integrated Pilot Candidate Screening Program (PCSP) (a combination of AFOQT and psychomotor test scores, flight screening results, and age) would save the Air Force money in decreased attrition. Analysts concluded the integrated score had more predictive value than previous measures or any single measure used alone or sequentially.<sup>59</sup>

When the working group briefed General Andrew P. Iosue, ATC commander, in February 1984, he had many reservations about its recommendation to use the PCSP, wanting more data to back up the group's claims. He claimed a centralized flight screening program for ROTC students was the "best way to select out poor candidates." He was concerned about the currency of the research, exclusion of possession of a technical degree as a predictor, and the possible "practice effect" of video games on the psychomotor test results. General Iosue wanted working group members to look into a single-stage, pass or fail, psychomotor screening model. His DCS for Operations, Maj Gen Chris O. Divich, also wanted them to compare the results of psychomotor tests to class standings of



**ATC hoped to use the information from the Basic Attributes Test to help select the best candidates for pilot training.**

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<sup>59</sup> The AFHRL study also looked at other variable such as race, technical degree, marital status, and sex before concluding these factors offered no improvement in predictability. *Ibid*; History (FOUO/PV), ATC, 1983, pp. 122-123, info used is not FOUO/PV; History (FOUO/PV), ATC, 1984, p. 140, info used is not FOUO/PV.

members of a UPT senior class. They reported the initial results in April.<sup>60</sup>

The working group found that the single stage, pass or fail, psychomotor screening model had higher false rejection rates and lower correct rejection rates than the integrated PCSP. While it compared favorably with the false rejection rates from the FSP alone, the single-stage, psychomotor test rejected more people who could have graduated from UPT and accepted more who couldn't. The group stated it found possession of a technical degree offered no unique predictive information and, in fact, was redundant to the information available from the AFOQT scores. Where AFOQT scores were not available, i.e., for Academy cadets, possession of a technical degree was included as a predictor. Between May and July, the HRL tested junior and senior classes at Williams AFB, discovering a strong correlation between the psychomotor scores and fighter-attack-reconnaissance recommendations and class standings. Researchers concluded that psychomotor skills represented important components of screening and training and could be measured through the developed integrated test system. While resistance at HQ ATC remained strong, a compromise was reached: passage to UPT would depend on successful completion of FSP and the integrated PCSP score. In January 1985, General Iosue approved a one year test at Hondo using the integrated, weighted score system, now called the Pilot Candidate Selection Method.<sup>61</sup>

ATC was about to implement the Pilot Candidate Selection Method when the Air Force decided to change from Generalized to Specialized Undergraduate Pilot Training, classifying students by major weapons system prior to entry into pilot training. Command personnel had been working with

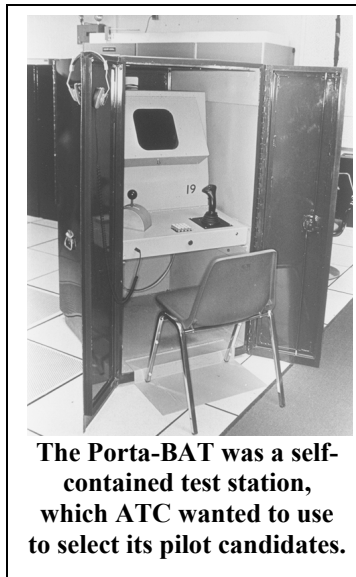
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<sup>60</sup> History (FOUO/PV), ATC, 1984, p. 141, info used is not FOUO/PV.

<sup>61</sup> *Ibid*, pp. 141-142; History (FOUO/PV), ATC, 1975, p. 124, info used is not FOUO/PV.

AFHRL researchers for years in the development of a pilot candidate selection program, whose core was a computer administered test known as the Basic Attributes Test, a collection of 13 subtests designed to measure certain psychomotor and cognitive skills and various psychological factors. AFHRL personnel conceived a portable, self-contained test station consisting of a minicomputer, control sticks, and desk. When the test station was combined with the BAT software, the complete system was appropriately called the Porta-BAT.<sup>62</sup>

The closer ATC came to switching to SUPT, the more important it became to have a reliable way to determine which candidates should enter flying training and which aircraft they should fly after graduation. ATC officials were optimistic that the work they had done in developing the pilot selection methods over the years with their AFHRL counterparts could identify candidates who were most likely to complete pilot training and pursue a career in flying, but classification into which weapon system was another matter entirely. Under Generalized UPT, the command did not have to decide which aircraft the pilot trainee would fly until about eight weeks before graduation, and officials based that decision almost entirely on the student's flying proficiency. But late in 1987, Air Force Chief of Staff General Larry D. Welch decided the classification decision in SUPT should be made up-front before pilot candidates entered the T-37 phase of flight training. Suddenly, classification decisions were much more difficult. Since ATC and AFHRL were already



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<sup>62</sup> ATC History (FOUO/PV), 1988, pp.176-179, info used is not FOUO/PV.

involved in improving the selection of pilot candidates, it only made sense to factor in the Porta-BAT results with AFOQT scores, college grade point averages, volunteer statements, commanders' assessments, hand-eye coordination tests, mental capacity, motivation and other personality tests, and interviews with active duty pilots to help make classification decisions. As a result, the test was renamed the Pilot Selection and Classification System (PSACS).<sup>63</sup>

As ATC envisioned it, PSACS would be a two-phased process. Phase I involved the selection of pilot candidates from the Air Force Academy, AFROTC, OTS, and active duty Air Force members, using the Porta-BAT results, AFOQT scores, and those other factors mentioned previously. Once candidates completed whichever flight screening program they attended (FIP for ROTC, PIP for the Academy, and FSP at Hondo for the rest who did not already have a private pilot's license), they would be classified and assigned to one of four major weapon system categories—fighters, transports, tankers, or bombers—the second phase of the process. ATC expected classification criteria would include such factors as performance in flight screening, indicators of the candidate's officer potential, and personal preference statements. Air Force officials saw two advantages to PSACS. Firstly, they hoped to instill a greater sense of dedication to and identification with the potential pilots' chosen weapon system by letting them know early on which weapons system they would be flying. Secondly, they hoped the more comprehensive screening data provided by PSACS would lower the high UPT attrition rates, which had ranged between 22.5 to 36.9 percent over the past six years, to a more acceptable 20 percent.<sup>64</sup>

Between 1988 and 1990, ATC staff members were immersed in a myriad of details to turn this dramatic shift in pilot selection and classification into reality. ATC hoped to reach initial operating capability with PSACS by 1 April 1991. Toward that

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<sup>63</sup> Hist (FOUO/PV), ATC, 1989, pp. 123-127, info used is not FOUO/PV.

<sup>64</sup> Hist (FOUO/PV), ATC, 1988, pp. 176-179, info used is not FOUO/PV.

end, the command published a program guidance letter in June 1990, which provided for BAT testing of all pilot candidates who went through flight screening at Hondo during the summer of 1990. This included OTS pilot candidates and those who had not completed the ROTC or Academy flight screening programs. Some of those candidates would be part of the first SUPT class at Reese AFB in April 1992. Between May and October 1990, approximately 350 trainees completed the testing, filled out preference statements, and graduated from the flight screening program at Hondo. Everything looked as if it were a go until the winter of 1991.<sup>65</sup>

During the annual winter meeting of Air Force four-star generals in February 1991, General Merrill A. McPeak, the new Air Force Chief of Staff, expressed concerns about the lack of satisfaction UPT graduates had with their assignments. He informed Lt Gen Joseph W. Ashy, the ATC commander, that he wanted the existing UPT assignment process changed “so people can do what they want to do.” He overturned General Welch’s direction, mandating that SUPT classification take place at the end of the T-37 primary phase rather than before training began and the return to a merit assignment system like that used prior to 1972 where students could choose their own assignments based on their performance (class standing). The PSACS suddenly became passé. To salvage the years of time, effort, and resources put into development of PSACS, ATC decided to use the results of the completed research to refine the selection process, now renamed the Pilot Candidate Selection Method (PCSM). Command flying training managers planned to make the BAT results and other information available to the OTS and AFROTC selection boards, placing the Porta-BATs at ROTC detachments, various Military Entrance Processing Stations around the country, and 44 active duty bases, 3 of them overseas. ATC expected PCSM to help identify candidates likely to succeed in SUPT before they entered flight screening and looked forward to implementing it in the

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<sup>65</sup> *Ibid*; Hist (FOUO/PV), ATC, 1989, pp. 224-230, info used is not FOUO/PV.

summer of 1993. Once implemented, OTS, Air National Guard, and Air Force Reserve boards used PCSM successfully to identify their pilot candidates. Some ROTC cadets went through the PCSM process as well, although HQ AFROTC did not use the scores exclusively to identify its candidates.<sup>66</sup>

**Figure 10**  
**UPT Attrition by Source of Commissioning**

	FY82	FY83	FY84	FY85	FY86	FY87	FY88	FY89
AFA	14.2%	22.3%	16.0%	17.0%	22.6%	31.1%	21.7%	24.0%
OTS	26.6%	28.3%	22.4%	18.6%	27.5%	36.9%	25.8%	23.9%
ROTC	26.0%	34.6%	28.1%	29.1%	33.9%	42.9%	32.4%	25.4%
Rated	3.7%	4.7%	0	5.3%	11.5%	18.1%	12.4%	10.2%
NR	32.4%	36.1%	29.7%	18.8%	21.9%	37.0%	32.9%	31.7%
USAF	23.7%	29.0%	23.0%	22.5%	28.3%	36.9%	26.9%	24.3%
Rated—Rated Officers NR—Non-rated Officers								
Source: Rpts, 619TRSS/ADP, “Monthly Production,” <i>ca.</i> Sep 83-Oct 98.								

### Transitioning from FIP to LATR

By 1980, FIP consisted of 25 flying hours: 16 dual, 8 solo, and a 1-hour evaluation flight. Contractors located near the various AFROTC detachments taught the flying portion

<sup>66</sup> In 1975, ROTC officials reduced the FIP flying time from 35 to 25 hours as an energy conservation method. Maj Ronald P. Wojack, “View of an Innovated Change to the AFROTC PIT,” ACSC, 1981; Hist (FOUO), ATC, 1991, pp. 226-227, 233-234, info used is not FOUO; MFR, Lt Gen J. Ashy, ATC/CC, “PSACS Brief to CSAF,” 23 Feb 91, SD IV-31 in 1991 history; Ltr, Col James E. Watson, ATC/RS, to XPS, “Basic Attributes Testers (BATs),” 2 Apr 91, w/ atch BATS Study, SD IV-45 in 1991 history; Hist (FOUO), ATC, Jan 92-Jun 93, p. xix, info used is not FOUO; History (FOUO), ATC, 1996-1999, pp. 186-187, info used is not FOUO.

of the program while rated military instructors taught ground school subjects. But by 1982, high UPT attrition rates among ROTC graduates prompted a request to look into providing additional flight screening instruction at Hondo for those graduates identified as “high risk” UPT entries based on their performances in FIP. Unfortunately, cost cutting measures reduced flying hours in the FIP syllabus. Attrition rates remained high, skyrocketing to 34.6% for ROTC graduates in UPT in FY83. In January 1984, AFROTC officials asked ATC to test a consolidated field training and flight screening program at Lackland to evaluate the use of centralized screening to reduce AFROTC attrition in UPT. The officials knew a centralized screening program had worked successfully for OTS candidates who historically had high UPT attrition rates. ROTC pilot candidates would attend a special five-week field training program at Lackland and substitute FSP at Hondo for FIP. The two-year test reduced the FSP syllabus time from 16 to 12 days but kept 12 sorties with 14 flying hours and 22 hours of ground training and academics. Beginning on 19 July 1984, ATC sponsored the consolidated program for two classes of cadets (74 in the first, 73 in the second). The first group started with flight screening while the second did field training first, followed by flight screening. Interestingly, 31 cadets were eliminated from the flight screening program in the first group while the second group had a 6.5 percent decrease in overall attrition. Clearly, attending the field training portion of the consolidated program first proved beneficial for the cadets as they had a chance to become accustomed to military discipline before entering into the highly structured flight screening program. AFROTC officials were pleased with the initial results of the program. They believed FSP was a more valid discriminator than FIP because of the increased level of standardized instruction and evaluation. ATC and AFROTC repeated the expanded six-week, consolidated program in the summer of 1985, but this time all the cadets went through the field training portion first. Beginning on 6

May 1985, four separate groups of cadets attended the encampments with the final group ending up on 24 August.<sup>67</sup>

General Iosue regarded the test as successful. As a result, HQ ATC considered a three-source ROTC flight screening program: retain 10-to-13 quality FIP programs at universities (quality defined as those who graduated the most cadets who successfully completed UPT); institute a combined AFROTC field training/flight screening program at Lackland and Hondo; and develop an additional site at a civilian flight school for screening after cadets attended various field training encampments around the country. By the summer of 1986, the three-source plan was in full operation. Civilian contractors at 13 sites provided FIP for about 250 cadets. A full-fledged ROTC FSP at Hondo started in the summer, and the Air Force opened a second contractor-operated flight screening program at Embry Riddle Aeronautical University at Daytona Beach, Florida. The two FSP sites followed the same 14-flying hour syllabus and flew the same aircraft, the Cessna 172—the Air Force's T-41. Some 640 AFROTC cadets were screened at the two sites during the summer of 1986. Total attrition rate for the summer program was at 28 percent. Pleased with the FSP results, AFROTC did not renew the contracts in 1987 with the 13 flying schools near the detachments. By then, the program at Embry Riddle was up and running, providing the standardized flight screening ROTC officials wanted.<sup>68</sup>

On 31 May 1987, AFROTC phased out FIP in favor of the new Light Aircraft Training for ROTC (LATR) at Hondo and Embry Riddle. One of the lessons learned from the experience of the previous three years was that most students entering into FSP immediately upon completion of field training were tired and worn out. Beginning in 1987, most cadets participating in LATR

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<sup>67</sup> Hist (FOUO/PV), ATC, 1984, pp. 144-145, info used is not FOUO/PV; Hist (FOUO/PV), ATC, 1985, pp. 128-129, info used is not FOUO/PV.

<sup>68</sup> History (FOUO/PV), ATC, 1986, pp. 128-129, info used is not FOUO/PV; History (FOUO), ATC, 1987, pp. 150-152, info used is not FOUO



would do so between their junior and senior years in college instead of their sophomore and junior years. The program in 1987 consisted of three classes at each site. Total flight screening attrition in LATR for the summer program dropped to 17.5 percent with a marked reduction in self-initiated and medical eliminations. The reduction in self-initiated eliminations was due primarily to the additional time given to cadets entering directly from field training. Officials believed LATR was successful because of its increased emphasis on motivation and flight training prior to screening. However, in 1988 with the number of LATR participants cut by roughly a third (532 in the summer of 1987 compared to 377 in 1988), ATC consolidated all its flight screening program training at the Hondo Municipal Airport where Doss Aviation continued to run the FSP for OTS and foreign students. When it dropped the contract with Embry Riddle, ATC also dropped the LATR syllabus, adopting the OTS syllabus (22 hours of ground training and 14 hours of flying training) with minor modifications for both groups of students.<sup>69</sup>

Strangely enough, no sooner had ATC consolidated all flight screening at Hondo that the command started looking for a second site to conduct LATR screening to accommodate the projected increases (from 500, Hondo's capacity, to 700-750 cadets a year) in ROTC production. HQ AFROTC came up with an alternative solution, suggesting setting up a program whereby local contractors at 30 ROTC detachments would provide training; but this time it would lead to a private pilot's license for the successful candidates. Instead of just 14 flying hours, students would receive 45 flying hours and a Federal Aviation Administration license. One of the most attractive features of the proposed program was that, historically, UPT students who already had private licenses tended to do better in UPT and graduate at higher rates than their counterparts who didn't.

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<sup>69</sup> Hist (FOUO), ATC, 1987, pp. 150-152, info used is not FOUO; Hist (FOUO), ATC, 1988, pp. 195-197, info used is not FOUO.

AFROTC officials hoped to put this new program into operation in the summer of 1989.<sup>70</sup>

### **Enhanced Flight Screening**

By 1989, with the transition to specialized undergraduate pilot training set to start in 1991, the ATC commander, Lt Gen Robert C. Oaks, thought it was time that the command examine all of its flying training programs, looking for improvements to the entire process. Between January and July, ATC sponsored three Board Area Review (BAR) meetings with representatives from all parts of the flying training world—UPT and undergraduate navigator training wing commanders, U.S. Navy flying training specialists, and action officers from the Air Staff and using MAJCOMs. A decision to revamp the flight screening program was one conclusion that came from the review.<sup>71</sup>

Initially, BAR participants looked at only tinkering with flight screening, proposing such things as adding more T-41 flying hours; but most members thought adding hours would lead to only marginal benefits, at best. Furthermore, existing flight screening procedures didn't provide enough feedback to make knowledgeable classification decisions or give candidates enough experience to make informed decisions about which type of aircraft they wanted to fly. As a result, they began to "think out of the box," exploring the possibility of replacing the T-41s with an aerobatic-capable aircraft. From these discussions, ATC began promoting an enhanced flight screening (EFS) program with a goal to make flight screening more of a barometer of a student's potential. The ultimate goal, of course, was to lower the attrition rate in SUPT to 15-20 percent. That rate was significantly lower than the 25.7 percent rate the command had averaged over the previous 10 years. Since each attrition percentage point cost approximately \$1 million, the potential savings were substantial.

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<sup>70</sup> Not all ROTC cadets would participate in this new program. Some would continue in the FSP at Hondo during the summer. History (FOUO/PV), ATC, 1989, pp. 139-140, info used is not FOUO/PV.

<sup>71</sup> Hist (FOUO/PV), ATC, 1989, p. 134, info used is not FOUO/PV.

ATC also thought offering all pilot candidates a similar flying experience would improve flight screening. Up to 1991, most OTS and ROTC cadets received 14 flying hours in the T-41A, a Cessna 172. Active duty officers, OTS, and ROTC candidates who already had private pilot's licenses, and weapon system officers who were entering flying training, did not go through the flight screening program. Air Force Academy cadets went through the PIP program, which consisted of 18.5 to 21.5 flying hours in the T-41C, a Cessna 172 with a more powerful engine to handle the higher altitude of Colorado Springs. The plan was to have all pilot candidates go through the ESP program either at Hondo or the Air Force Academy. Command planners wanted the same flight experience to include not only aerobatics but also flying overhead traffic patterns and exposure to moderate G-loading as well, all of which were impossible with the T-41. The EFS program ATC wanted required a new aircraft.<sup>72</sup>

While the command went through the lengthy process of acquiring a new aircraft, it established a test program at Hondo for the summer and fall of 1990 to see how well the enhanced flight screening program would fit with the Pilot Selection and Classification System. The plan scheduled the test to run alongside the standard T-41 FSP. Doss Aviation leased seven aerobatic-capable aircraft, and OTS's 1<sup>st</sup> Flight Screening Squadron, activated on 15 June 1990 to supervise FSP operations at Hondo, would assume the same role for the test. Students for the test came from four sources—AFROTC, AFA, OTS, and active duty officers, including seven navigators. None of them had a private pilot's license. Some 57 students entered the test, and 47 successfully completed the program for an attrition rate of 17.5 percent, considerably lower than the forecasted rate of 25 percent. Doss Aviation officials chose an Italian aircraft, the Augusta Siai Marchetti SF-260, for the test. The Marchetti SF-260 was a fully aerobatic, high-performance aircraft with side-by-side seating and

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<sup>72</sup> Hist (FOUO/PV), ATC, 1989, pp. 126-127, info used is not FOUO/PV; Hist (PV), ATC, 1991, pp. 223-224, info used is not PV.

retractable landing gear. Its low wing configuration, a feature ATC insisted on, permitted flying overhead patterns.<sup>73</sup>

The test was a success, meeting all three major objectives: it validated the proposed EFS syllabus, defined the requirements for the T-41 replacement aircraft, and determined that the EFS program meshed with the Pilot Selection and Classification System. Throughout the test, ATC's instructor pilots closely evaluated the Marchetti SF-260 to identify features they thought necessary for the T-41 replacement. They settled on five major items: retractable landing gear, air conditioning, an electric trim button, a safer fuel system with a reliable low fuel warning system, and capability to fly using instrument flight rules so training could continue when low clouds covered the training areas.<sup>74</sup>

While the test was going on at Hondo, ATC and the Air Force Academy sponsored an operational suitability demonstration to promote a dialogue between aircraft companies interested in supplying the Air Force with the enhanced flight screener and those involved with the acquisition. Taking place between 22 July and 10 August 1990, the demonstration attracted 10 companies from 6 different countries: Aerospatiale (France), Mooney (US), FFA (Switzerland), Siai Marchetti (Italy), SAAB (Sweden), Slingsby (United Kingdom), Glassair (US), Piper (US), American General (US), and Taylorcraft (US). ATC officials considered the suitability demonstration to be a win-win situation for all concerned. Contractors were able to see how their aircraft performed in the demanding flight environment of the Air Force Academy and learn more about the Air Force acquisition process, while the Air Force gained an idea about what was available in the commercial market. ATC and Academy officials intended to use

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<sup>73</sup> Hist (FOUO/PV), ATC, 1990, pp. 230-239, info used is not FOUO/PV.

<sup>74</sup> *Ibid.*

the information they gathered to develop the request for proposal.<sup>75</sup>

On 17 January 1991, ATC published the system operational requirements document for the enhanced flight screener, which called for the purchase of 125 aircraft—69 for ATC and 56 for the Air Force Academy (later reduced to 57 for ATC and 56 for the Academy). Command managers expected to receive the first aircraft for qualification operational test and evaluation in May 1992 and wanted to begin training students at Hondo in October 1992. The Academy wouldn't receive its first planes until June 1993 and wouldn't start training students until January 1994. On 29 April 1992, Aeronautical Systems Division at Wright-Patterson AFB, Ohio, announced the selection of the team of Slingsby Aviation Limited of Great Britain and Northrup Worldwide Aircraft Services, Inc. of Oklahoma to produce the new enhanced flight screener aircraft. Later designated the T-3A, the Air Force chose a single-engine, piston-driven variant of the Slingsby Firefly with side-by-side seating, dual-stick controls, and a cruising speed of 178 miles per hour. To make the plane even more attractive, the Firefly was commercially available and FAA certified for aerobatics.<sup>76</sup>

Unfortunately, before ATC got too far in the process, some of the companies involved in the competition protested the contract award, involving Congress' investigative arm, the General Accounting Office (GAO). It wasn't until September 1992 that ATC learned that the GAO had cleared the command to

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<sup>75</sup> Summary, ATC/XPRP, "EFS Operational Suitability Demonstration, USAF Academy, 22 Jul-10 Aug 90," n.d., SD IV-83 in 1990 ATC History.

<sup>76</sup> For more information about the command's initial experience with the T-3A, see Study, SSgt Timothy M. Brown, *Introduction of the Enhanced Flight Screener*, Jul 95; Hist (FOUO/PV), ATC, 1991, pp. 223-225, info used is not FOUO/PV; Hist (FOUO/PV), ATC, Jan 92-Jun 93, p. 154, info used is not FOUO/PV; Edward H. Phillips, "Slingsby Fireflies to Help Screen Potential USAF Pilots," *Aviation Week and Space Technology*, 11 May 92, p. 65, SD V-42 in Jan 92-Jun 93 ATC History.

continue with the enhanced flight screening program as planned. But this didn't end ATC's problems. Late in 1991, the DoD Inspector General asked the Air Force to comment on a draft audit that claimed the Air Force had not adequately justified the need for an aircraft to replace the T-41. Without the necessary justification, the Inspector General asserted that the Air Force should cancel its plans to buy 125 aircraft and save the \$28 million expense. The Air Force rebutted this vehemently, apparently convincing the Office of the Secretary of Defense to allow the contract award to proceed as planned. Nevertheless, the various reviews forced the Air Force to make major adjustments to the EFS program, cutting the number of aircraft it procured from 125 to 113 and delaying delivery of the T-3A by almost a year. The command projected it wouldn't start student training at Hondo until February 1994 and not until January 1995 at the Academy.<sup>77</sup>

The 12<sup>th</sup> Flying Training Wing (FTW) at Randolph AFB, Texas, did not receive its first T-3A until 4 February 1994, when the contractor handed over two aircraft at its facility at Hondo. There, Slingsby instructor pilots checked out an initial cadre of six active duty IPs from the 3<sup>rd</sup> Flying Training Squadron (FTS), along with pilots from Nineteenth Air Force and the Air Force Operational Test and Evaluation Center. This group trained the rest of the squadron's assigned pilots. In turn, they checked out the contract pilots from Doss Aviation who actually trained the OTS and ROTC students. On 14 March 1994, the first five students began flight screening in the T-3A in Class 94-11.<sup>78</sup>

Almost immediately, the 3FTS began experiencing problems with the T-3A, which seemed to center around the aircraft's 260-horsepower (hp) Lycoming engine. This was the

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<sup>77</sup> Hist (FOUO/PV), ATC, Jan 92-Jun 93, pp. 153-155, info used is not FOUO/PV.

<sup>78</sup> On 7 March 1994, the 1<sup>st</sup> Flying Training Squadron, which had been consolidated with the 1<sup>st</sup> Flight Screening Squadron on 1 May 93, was inactivated, and the 3<sup>rd</sup> Flying Training Squadron activated in its place. Hist (FOUO/PV), AETC, Jul 93-Dec 95, pp. 152-157, 367, info used is not FOUO/PV.

first time Slingsby had used a 260-hp engine in the Firefly as other versions of the aircraft flew with 160 or 200 hp engines. Between 18 February and 20 July 1994, the engines failed 12 different times during ground operations at idle or low RPM [revolutions per minute] settings. After the last instance, AETC's vice commander, Lt Gen Eugene Habiger, grounded the command's 16 T-3s. While the aircraft were grounded, the 12FTW diverted the students to the Air Force Academy where the T-41 was still flying.<sup>79</sup>

After looking into the problem for several months, AETC lifted the ban on flying once Slingsby fitted the T-3As with a modified fuel system. The 3 FTS resumed operations on 6 September, training the initial cadre of IPs for the enhanced flight screening program at the Academy. Student training at Hondo restarted on 20 September, when Class 95-02 entered flight screening.<sup>80</sup>



But the problems AETC had with the Firefly didn't end there. On 22 February 1995, a T-3A flown by an Air Force Academy student and his instructor on a routine mission crashed in the training area, killing

both. As a result of the accident, AETC decided to incorporate parachutes in the T-3 program at both the Air Force Academy and Hondo. Problems continued. The command had to deal with delays in the installation of new air conditioners, wing bonding problems, and continued engine stoppages. By November 1995, AETC had experienced 34 engine stoppages, mainly at the Air Force Academy in the summer. Thirty-two occurred on the

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<sup>79</sup> *Ibid.* On 1 July 1993, the Air Force redesignated Air Training Command as Air Education and Training Command.

<sup>80</sup> *Ibid.*

ground at idle and two in flight. As command officials waited for the delivery of the last T-3As in January 1996, their frustration level over the many problems they encountered trying to bring the T-3A on-line was high.<sup>81</sup>

With delivery of the last T-3A on 9 January 1996, the command initiated a follow-on test and evaluation (FOT&E) of the Firefly to ensure

it met operational needs and retained its effectiveness both at Hondo and the Academy. Upon conclusion of the FOT&E in October, test officials determined the aircraft lived up to



**A beleaguered T-3A at Hondo.**

expectations by reducing SUPT attrition in FY94-95. (See Figure 11.) After examining the UPT graduation data available between January and October 1996, the analysts found that students who had flown the T-3A and went into SUPT experienced an attrition rate of 8.6 percent, significantly lower than the 17.8 percent attrition experienced by students who had flown the T-41. Test results also showed the T-3A was operationally effective at both EFS locations. However, test officials had much different conclusions when maintenance requirements were considered—the T-3A did not meet three of the five criteria measured. Therefore, the test team thought it unlikely that the new aircraft could meet the mandated 95 percent fully mission capable rate or 98.5 percent mission completion success probability rate consistently.<sup>82</sup>

However, everyone knew there were several areas of concern, a fact brought to the forefront when a second T-3A

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<sup>81</sup> *Ibid.*

<sup>82</sup> History (FOUO), ATC, 96-99, pp. 179-180, info used is not FOUO.



crashed at the Air Force Academy on 30 September 1996; the engine stopped, the aircraft stalled, and the IP couldn't recover. Once again, both the instructor pilot and the student were killed. This highlighted the urgency of finding the causes of the engine stoppages and fixing them. Oklahoma City Air Logistics Center, which had management responsibility for contract logistics support, contracted with Scientific Applications International Corporation (SAIC) to help resolve the problems. By May 1997, AETC commander, General Lloyd W. Newton, reported to General Ronald A. Fogelman, Air Force Chief of Staff, that the command had made some progress in resolving the engine problems. Unfortunately, he spoke too soon for on 26 June 1997, the Academy experienced its third T-3A mishap, once again losing the instructor pilot and cadet. After yet another engine stoppage, General Newton stopped all T-3A flight operations on 25 July 1997 and commissioned a Broad Area Review on the entire enhanced flight screening program.<sup>83</sup>

Before ATC could complete its BAR, the Acting Secretary of the Air Force, F. Whitten Peters, directed the Secretary of the Air Force Inspector General to conduct a BAR of the program, superseding AETC's effort. On 17 March 1998, the

<p><b>Figure 11</b> <b>USAF SUPT Attrition by Source of Commissioning</b></p>							
	FY90	FY91	FY92	FY93	FY94	FY95	FY96
AFA	19.0%	17.8%	16.6%	15.8%	12.6%	7.3%	14.2%
OTS	24.2%	21.5%	4.3%	0%	12.5%	14.3%	0%
ROTC	26.7%	23.3%	18.7%	18.0%	16.2%	13.0%	22.0%
Rated	14.9%	7.1%	6.0%	0%	0%	0%	0%
NR	22.0%	20.0%	7.1%	11.1%	42.9%	22.2%	21.3%
USAF	23.2%	20.2%	15.7%	16.5%	14.5%	12.1%	18.4%
Source: Rpt, 619TRSS/ADO, "Monthly Production," Oct 97.							

<sup>83</sup> *Ibid*, p. 181, info used is not FOUO.

Inspector General released his report, which recommended 48 changes to the program, including completing the FOT&E at the Air Force Flight Test Center at Edwards AFB, California; finishing the modifications to the fuel systems; and publishing various guidance, procedures, manuals, and syllabi. The report also advised the Academy to adopt the organization at Hondo and convert its military IPs to civilian contractors. But the path to resuming T-3A flight operations was not smooth. In June, FAA test pilots, working with SAIC on the modified-fuel-system aircraft, limited unrestricted flight operations to only 1.0 hour because of reduced available fuel. Since the typical T-3A sortie averaged 1.4 hours, the FAA ruling considerably limited air work and pattern training in the Firefly. Later in June, General Fogelman said he wanted an extraction system installed before AETC could fly the aircraft with students again.<sup>84</sup>

Obviously, much remained to be accomplished before training could resume in the summer of 1999; but in August 1998, Brig Gen Sharla J. Cook, AETC's Director of Logistics, suggested proceeding at a slower pace in the command's efforts to resume screening with the T-3A. By not rushing, AETC could continue with the fuel modifications and follow-on testing and establish more realistic contracting milestones for the extraction system and contracted instructors at the Academy. However, she conceded that this more measured approach required an interim screening program. Her views triumphed; and in September 1998, AETC announced it was putting the T-3A in minimum maintenance status.<sup>85</sup>

### **Introductory Flight Training**

However, without any flight screening program, AETC's fear materialized—student attrition in the primary phase of Joint Specialized Undergraduate Pilot Training began to rise, climbing to 15.6 percent in FY99 for those without any previous flying

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<sup>84</sup> *Ibid*, pp. 181-183, info used is not FOUO.

<sup>85</sup> *Ibid*, pp. 184-185, info used is not FOUO.

experience. AETC Directorate of Operations staff members had already been looking into an interim screening program before General Cook made her suggestion, ultimately deciding to go with a contractor-operated program similar to the Flight Instruction Program AFROTC had been using for many years. Referred to as Introductory Flight Training (IFT), the program called for AETC to buy flight instruction from fixed base operators who ran aviation schools at airports near the Academy and ROTC detachments around the country. OTS graduates and officers already on active duty would get training by a contractor near the SUPT bases to which they would be assigned. The approach had several points in its favor. Most important was that it could be implemented quickly: most of the companies used aircraft in the Cessna 150/172 range and had FAA-certified flight instructors who could conduct a 40-hour program that met FAA standards and could lead to a private pilot's license. While a private pilot's license was desirable, it was not a mandatory outcome from IFT at this point. Additionally, the price was right—about \$100 per flying hour. General Newton agreed, deciding to use a combination of IFT and the Pilot Candidate Selection Method to identify those who had a better chance of successfully completing SUPT. AETC expected IFT to keep attrition rates within acceptable limits. The decision signaled a subtle shift from a flight screening program to a flying training program that could lead to a private pilot's license for the participants.<sup>86</sup>

AETC wasted no time in getting the IFT program running. The Air Force Academy implemented the new program late in October 1998, followed by ROTC in the middle of November. After almost a year in operation, the Air Force Officer Accession and Training School, parent organization for both AFROTC and OTS, had enrolled 846 candidates in IFT and graduated 495, while 663 Academy cadets were in the program and 470 had graduated. Most significantly, the attrition rate for those in the 22 SUPT classes between October 1998 and September 1999 who had gone through IFT was only 8.8 percent,

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<sup>86</sup> *Ibid*, pp. 186-187, info used is not FOUO.

which compared favorably with the 7.8 percent rate of those who had gone through T-3A screening and the 11.3 rate for those who went through T-41 screening. The attrition rate for candidates who had no previous flying experience prior to SUPT was 15.6 percent.<sup>87</sup>

While AETC was pleased with the results of the first year of IFT operations, it didn't answer the question of what to do with the T-3A and enhanced flight screening program. Maj Gen William Welser III, AETC Director of Operations, was solidly behind IFT, recommending expanding it from 40 to 50 hours and making a private pilot's license a mandatory part of the program. If a student didn't solo within the first 25 hours or earn the private license within 50 hours, he or she would be eliminated from flying training. Since it took an average of 70-80 hours for most people to earn the private licenses, instituting a 50-hour limit served as a way of judging a candidate's potential to complete SUPT. Furthermore, passing the FAA check ride, a requirement for a private pilot's license, provided a degree of standardization missing from the 40-hour program. General Newton agreed. On 8 October 1999, he suggested to the Secretary of the Air Force and the Air Force Chief of Staff that the Air Force adopt the expanded IFT program and dispose of the T-3A. They agreed, and on 8 October 1999 an AETC news release announced the end of Enhanced Flight Screening, the permanent cessation of T-3A flying operations, and the adoption of the expanded IFT program to go into effect on 3 January 2000. A private pilot's license was now a prerequisite for entry into Joint Specialized Undergraduate Pilot Training.<sup>88</sup>

With the decision to go with the expanded IFT program, command officials had to deal with the two 12 FTW squadrons that supported the enhanced flying screening program. AETC inactivated the 3 FTS at Hondo Municipal Airport on 7 April 2000; and the Air Force reassigned the 557 FTS at Colorado

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<sup>87</sup> *Ibid*, p. 188, info used is not FOUO.

<sup>88</sup> *Ibid*, pp. 188-189, info used is not FOUO.

Springs, Colorado, from the 12 FTW to the Air Force Academy on 1 October 2000. That still didn't answer the question of what to do with the T-3As. AETC first asked about disposition instructions in October 1999. Almost a year later, September 2000, the command raised the question again. It wasn't until November 2001 that anyone showed any interest in the fate of the mothballed fleet. In November the Air Staff Director of Operations and Training asked Maj Gen Doug Pearson, commander of the Air Force Flight Test Center, to look into the feasibility of using the T-3A fleet as companion trainers to give proficiency flying opportunities to pilots who didn't get enough flying time in their mission aircraft. To access the ability of the Firefly as a companion trainer, General Pearson planned to conduct an operational utility evaluation of the aircraft for safety, suitability, and effectiveness, but it wasn't until January 2002 that Chief of Staff General John P. Jumper authorized additional testing and evaluation of the T-3A fleet with Air Force Materiel Command as the lead.<sup>89</sup>



**An AFA cadet and his instructor flying in a Diamond DA20-C1.**

Wanting to provide military oversight to its IFT program, the Air Force Academy awarded a 50-hour IFT contract to Embry Riddle Aeronautical University to consolidate IFT training at the Academy airfield. The contract began on 1 October and called for training 300 cadets annually, featuring military oversight to ensure compliance with rigorous standards in an atmosphere like SUPT. All the same, the 50-hour program still couldn't accommodate all

<sup>89</sup> Hist (FOUO), AETC, 2000-2001, pp. 201-205, info used is not FOUO; Ltr, Gen John P. Jumper, USAF/CC, to Gen Donald Cook, AETC/CC, [testing and evaluation of the T-3A Firefly], 28 Jan 02, SD IV-41 in 2000-2001 AETC History.

Academy pilot candidates, forcing some into IFT off base. Furthermore, it was increasingly difficult to fit the 50-hour program into the cadets already crowded schedule. Academy officials wanted a program that the cadets could complete in one semester. Consequently, they forwarded a request to AETC in October 2002 to revamp its flight screening program, proposing one that would train all Air Force Academy candidates at the Academy with fewer hours and at a lower cost than the current program. Using an AETC-approved syllabus, the proposed program, now referred to as Academy Flight Screening (AFS), would consist of approximately 25 hours of flight training, including a pre-solo check ride, solo, and final check ride. Although the training would not lead to a private pilot's license, Academy officials believed it was neither efficient nor cost effective to continue the current 50-hour IFT program because of the drain it put on both cadet schedules and local airspace. The AFS concept of operations included a SUPT-type syllabus with SUPT-style stand-up emergency procedure reviews, briefings, and grading standards. They anticipated an average student would solo after 16 hours of flight training and take the final check ride at 23 hours. Embry Riddle would provide the flying training, using the Diamond DA-20-C1, a trainer specially modified to meet AFA specifications. Obviously, the advantage was retaining an effective screening process while providing military oversight of the program and doing so at a lower cost (estimated overall savings was \$1.2 million). After slightly modifying the proposal by adding more solo time, General Donald G. Cook, AETC commander, coordinated on the AFS proposal on 7 May 2003, sending it on to the Air Staff for final approval. Academy officials hoped to implement AFS in 2004.<sup>90</sup>

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<sup>90</sup> Email, MSgt Sylvia Crawford, AETC/DOEA, to AETC/DOE, "FW: A-DS-Academy Flight Screening (AFS) Proposal (DS2033882)," 16 Oct 02; Memo, AETC/CC to ISAFA/CC, "Academy Flight Screening (AFS) Program," 13 Dec 02; AETC/DSEA Inbox to AETC/DO Inbox, "A-DO-USAFA Flight Screening (DS0305740)," 7 May 03, w/5 atchs: 1) SSS, 34 OG/CC to USAF/CC, *et al.*, "Academy Flight Screening (AFS) Proposal," 7 Apr 03, 2) Ltr, Lt Gen John R. Dallager, USAFA Superintendent, to Gen John P. Jumper, USAF/CC, [Academy Flight Screening program], 10 Apr 03, 3) BBP, 557 FTS/CC, "USAF

As the Academy worked on the development of AFS, AETC officials began looking at IFT. They recognized the proposal for the Academy would initially create two different programs and two different sets of flying hours (50 for IFT and 25 for AFS) to fulfill the SUPT prerequisite, but they agreed that they could live with it, since they ultimately planned to return to a similar program for all commissioning sources. The intent of IFT for ROTC cadets was to train them to a defined standard (i.e., a passed FAA check ride) that could be replicated across the country, an element the earlier FIP didn't provide. Even so, the actual flight training wasn't standardized from one school to another. IFT was an "emergency procedure" implemented after General Newton grounded the T-3A. The program was not failing in the traditional sense, but command staff members wondered if there wasn't a better way to screen and prepare students for the demands they would face in SUPT. Civilian flight schools lacked the rigor and discipline required to complete military flight training. These courses were designed and paced to ensure almost anyone could get a private pilot's license. Additionally, as command managers examined the SUPT attrition data since 1998, they discovered that "dropped on request" began appearing more frequently as a reason for washing out of flying training. While no hard data existed, this prompted the suspicion that some candidates were not properly motivated to complete SUPT. More effective options for Air Force screening for aptitude and motivation had to exist, and the AFS proposal quickly got HQ AETC personnel thinking about its application for all commissioning sources.<sup>91</sup>

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Academy Flight Screening (AFS) Program," 4 Feb 03, 4) BBP, 557 FTS/CC, "AFS Funding," 22 Jan 03, 5) Position Paper, 557 FTS/CC, "USAF Flight Screening," 24 Jan 04, Disc, Ann Hussey, AETC/HO, w/ Wayne Mudge, AETC/DOFI, 9 Feb 04.

<sup>91</sup> Email, MSgt Sylvia Crawford, AETC/DOEA, to AETC/DOE, "A-DO-Academy Flight Screening (AFS) Proposal (DS203882)," 29 Oct 02; Brfg, AETC/XPPB, "AETC/XP Review of Introductory Flight Training," 28 Aug 03.

## Refining IFT

On 4 December 2002, not too long after the command received the Academy request to go to AFS, Brig Gen Stephen T. Sargeant, AETC Director of Plans and Programs, formed a multi-functional integrated process team to examine the current IFT program and determine if it could be adapted along the lines of AFS so that all pilot candidates would receive the same training in a similar environment. The team came up with three visions on how the IFT program could evolve: flight training at SUPT locations to provide training only; a single training location with training, housing, and meals provided by the contractor; and two-to-four regional sites with training, housing, and meals provided by a contractor. On 12 May 2003, AETC posted a request for information on the Federal Business Opportunities web site to gather information from contractors to review and provide cost estimates on the three basic options for a 25-flight-hour screening program sized to handle approximately 1,000 students per year. Interestingly enough, those companies that responded favored a single site where the contractor could provide standardized flight training for all pilot candidates (unless screened at the Academy) in a SUPT-like environment.<sup>92</sup>

Concurring with the contractors' basic idea, working group members believed a single-site screening program had the most to offer by rigorously and equitably preparing students for SUPT in a more standardized manner. As envisioned, the new program would reduce the number of flying hours required, anticipating most students to solo around the 15-hour point with a final check ride somewhere around 23-to-28 hours. Fewer flying hours also meant the pilot trainees could complete the course in

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<sup>92</sup> Email, Lt Col Charles W. Johnson, AETC/DOF, to AETC/DO Inbox, "FW: Introductory Flight Training-IPT Request for Information Status," 18 May 03; Email, AETC/DSEA Inbox to AETC/XP Inbox, "I-XP-Introductory Flight Training IPT Update (DS306142)," 9 Jun 03; Brfg, AETC/XPPB, "AETC/XP Review of Introductory Flight Training," 28 Aug 03; Brfg, AETC/XPPB, "AETC/XP Review of Introductory Flight Training," 2 Sep 03.



weeks rather than months. Furthermore, a single site program allowed the Air Force to supervise the training more closely. Military instructor pilots, not contracted instructors, would fly the check rides. After the briefing on 2 September 2003, General Cook wanted a solid business case for the new approach built and approved going out with a request for proposal for the single site plan, which the Plans and Programs staff hoped to publish in 2004.<sup>93</sup>

## **Conclusion**

When the demand for more pilots collided with high attrition rates during times of tight budgets, Air Force officials turned to some sort of flight screening to reduce attrition and help solve their pilot production problems. Prior to 1953, the Air Force and its predecessors, the Army Air Corps and Army Air Forces, ran no true flight screening program although they dabbled in a variety of flight introduction programs to please their political masters. It wasn't until 1951 that the Air Force began to think seriously about the benefits of eliminating pilot candidates from an earlier and cheaper phase of flight training with some sort of light plane screening. This new course didn't begin until the advent of the Revitalized Pilot Training Program in November 1952. For most of the next decade, ATC ran a light plane screening program to wash out those who couldn't or didn't want to meet the challenges of pilot training. But with the introduction of the T-37 and the all-jet training program in 1958, Air Force officials viewed light plane screening as counterproductive and ended it in November 1960. This ban remained in effect until 1965 when flight screening was reintroduced to counter rising attrition rates at a time when the demand for more pilots to fuel the war over the skies of Vietnam increased. Although flying hours in the program varied, depending on the fate of the Air Force budget, AETC ran a flight screening program in various forms until 1997 when insurmountable problems with the more demanding T-3A

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<sup>93</sup> Ibid; Disc, Ann Hussey, Historian, w/ John Harlan, AETC/XPPB, 18 Dec 03.

enhanced flight screener prompted the end of the program. Once again, rising attrition rates had a negative impact on pilot production, and AETC started a new screening program, Introductory Flight Training. While easy to manage and relatively inexpensive, a program conducted by a myriad of contracted civilian flight schools across the country failed to provide the degree of standardization and uniformity the military wanted. By 2002, the hunt was on for another new program, also contract operated, but designed with military oversight and structure to better prepare the Air Force's pilot candidates to meet the rigors demanded of them by specialized undergraduate pilot training. The shift from a civilian decentralized to a military centralized approach was planned again. Concern with the costs associated with attrition, both monetarily and personnel-wise, made it almost certain that the Air Force would continue to use some type of flight screening to find those pilot candidates whose chances to successfully complete flying training were high.